



Delivery, Consumption & Prices for Utility Service within California

California Public Utilities Commission Policy & Planning Division

Stephen St. Marie
Principal Author
**POLICY AND PLANNING
DIVISION**

Richard White
Principal Author
**POLICY AND PLANNING
DIVISION**

Marzia Zafar
Director
**POLICY AND PLANNING
DIVISION**

January 18, 2018





Contents

Introduction	2
Part 1: A View of California’s Regions	6
Background Information – Differences across California’s Regions	6
Utility Services – Differences across California’s Regions.....	18
Electric Usage and Bills	18
Gas Usage and Bills	23
Water Usage and Bills	28
Broadband Availability and Subscriptions	31
Part 2: Drilling Down by Region	36
Region 1: The North and the Mountains	36
Utility Services in the North and Mountains Region.....	37
Region 2: San Francisco and the Mid-Coast.....	40
Utility Services in the San Francisco and Mid-Coast Region	42
Region 3: The Central Valley	45
Utility Services in the Central Valley Region	46
Region 4: Los Angeles and the Coast	49
Utility Services in the Los Angeles and Coast Region.....	50
Region 5: San Diego and the Desert.....	53
Utility Services in the San Diego and Desert Region.....	54
Part 3: Data Sources Relied Upon for this Report.....	57
US Census Bureau Demographic Information	57
Electric and Gas.....	57
Water	57
Broadband.....	57



Introduction

The California Public Utility Commission's (CPUC's) Policy and Planning Division (PPD) prepared this report to give context to the ways that utility services are delivered, consumed, and priced throughout California. Most of the proceedings at the CPUC are related to one specific utility service, or even more specifically focused on one aspect of one service. And many proceedings are focused on one individual utility service provider's costs, rates, and processes. In contrast, this report looks at California overall and at five regions within California. It presents demographic information and information about the use and cost of several utility services. We hope that this exposition will be helpful in understanding California as an entity as well as providing a better understanding of California's rich diversity.



- California's population was over 39 million people in 2016 according to the latest report from the US Census Bureau. That is about 239 people for each of the state's 155,000 square miles of territory.
- California's population grew 5.4-percent from the year 2010.
- Those 39 million people live in about 14 million households, about 2.96 persons per household.
- Median household income was about \$62,000 in 2015, and average per-capita income was about \$30,300.

Here are some facts about Californians' consumption services associated with the work of the California Public Utilities Commission:



California households consume electric service at an average rate of 534 kWh per month in the summer months, and 459 kWh per month in the winter months. They pay about \$102 per month in the summer and about \$84 in the winter.



Monthly bills for gas utility service are lower in the summer months, about \$21, and higher in the winter months, about \$47. On average, residential consumers purchase about 16 therms per month in the summer and about 40 therms per month in the winter.



Water service costs about \$63 per month on average in California, and Californians consume about 78 gallons of water per day.



Broadband service is available in neighborhoods where about 97-percent of Californians live.¹

These facts describe California overall. But the overall facts about Californians can be supplemented by a regional review, a review that breaks out information into regions within the state. This report provides information about California and Californians across five regions, broken out so that it is possible to see the differences in incomes, in utility services and costs, and other information.

The five regions are based on the regions chosen and used for administrative purposes by the ***State Water Resources Control Board's Division of Drinking Water***. The counties of each region are listed in Part 2 of the report.

1. The **North and the Mountains**, consisting of 25 northern counties extending from Del Norte and Humboldt Counties on the coast, across the northern border of California to Modoc County, down the eastern border to Alpine, Calaveras, and Stanislaus Counties, and back up to north including Sacramento and up to Tehama County;
2. **San Francisco and the Mid-Coast**, consisting of 14 coastal and near coastal counties extending from Mendocino to Monterey Counties;
3. The **Central Valley**, consisting of eight counties centered around Fresno, from Tuolumne and Merced Counties on the north, to Kern County on the southern end;
4. **Los Angeles and the Coast**, consisting of four counties: San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties; and
5. Finally, **San Diego and the Desert**, consisting of seven counties from Orange and San Diego Counties on the coast, along the southern border of the state to Imperial County, and up the eastern border to Mono County.

This report is largely expository – that is, it is written to provide information. It is not written from a point of view or to advance any policy. Conclusions are left to the readers.

¹ CPUC-validated data were not available at the time the analysis was conducted for this report. The reported figure of 97-percent of households having broadband available at or above 6 Mbps down and 1 Mbps up is based on raw reported data. In contrast, subsequently validated data for use in measuring availability for the California Advanced Services Fund indicate that 96 percent of households have broadband available above 6 Mbps down and 1 Mbps up. The CPUC-validated data, reflecting December 31, 2016, were published on December 21, 2017 and are available on the CPUC website at <ftp://ftp.cpuc.ca.gov/telco/BB%20Mapping/2017/CA%202017%20-%20Household%20Availability%20by%20County%20and%20Consortia%20-%2020171221.pdf>.



The Five Regions of California



Public utility services are provided under the oversight and jurisdiction of the state of California, and in some cases, directly under the direction of this agency. The prices and terms and conditions of service are set according to tariffs approved by the California Public Utilities Commission (in the case of investor-owned public utilities) or by local government authorities (in the case of government-owned public utilities). Electric, gas, and water service are nearly universally available and generally follow this model. Similarly, though not technically a public utility service, broadband service also is nearly universally available, and in most places throughout the state, multiple potential providers vie for subscribers.

All Californians face issues regarding utility-related services, including issues of disparities of wealth, the possibility of natural – and not so natural – disasters, security of supply, and other issues. There is benefit in looking at California’s population and utility services from a regional perspective.

The report is presented in two parts:

- The first part provides information about all of the regions, including comparison charts across the regions, providing a view of the differences from one region to another. First, demographic characteristics are discussed. Then, information about utility services, usage, and cost.
- The second part discusses each region separately, pointing out its unique characteristics.



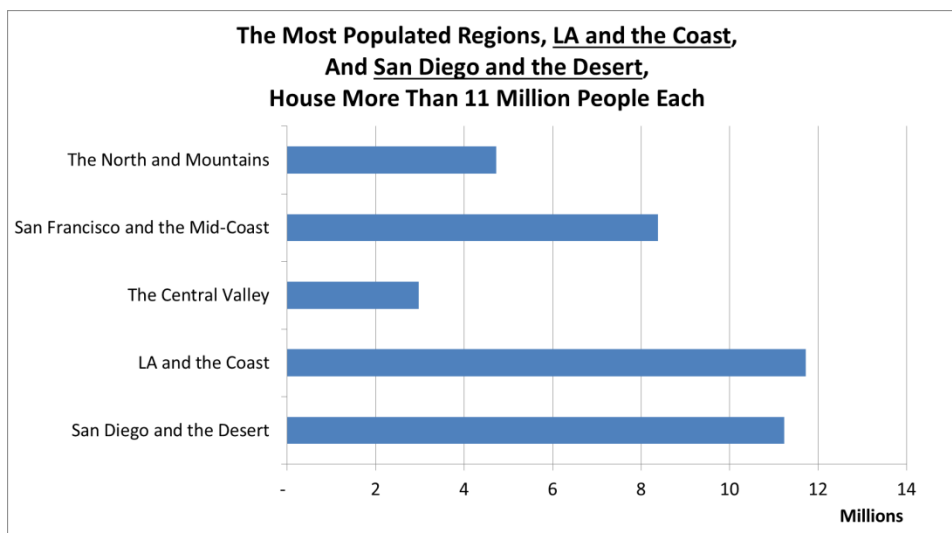
Part 1: A View of California's Regions

Background Information – Differences across California's Regions

The overall picture of California through five regions shows a complex pattern. This section details the numbers for specific measures according to information provided by the US Bureau of the Census. Though people are concentrated along the coast, the largest regions in terms of people are the Los Angeles and Coast region and the San Diego and Desert region. The population growth is in the San Francisco and Mid-Coast region and the San Diego and Desert regions. In terms of land area, the biggest regions are San Diego and the Desert and the North and Mountain regions, even though they are not the highest population regions. By far the most densely populated region is Los Angeles and the Coast, double the density of the region including San Francisco and the Mid-Coast, and ten times the density of the North and Mountains area. Median household incomes are highest in the San Francisco and Mid-Coast region and lowest in the Central Valley. The poverty percentage is just the opposite: highest in the Central Valley and lowest in the San Francisco and Mid-Coast region. The percentage of elderly, over 65 years, is greatest in the North and Mountains region and lowest in the Central Valley region. Perhaps closely associated with age, the greatest percentage of owner-occupied housing is also in the North and Mountains region. The lowest percentage is in the Los Angeles and Coast region, which is also the most densely populated. The value of owner-occupied housing is greatest in the San Francisco and Mid-Coast region and lowest in the Central Valley. Rents follow the same pattern: highest in the San Francisco and Mid-Coast region, and lowest in the Central Valley region. Finally, perhaps associated with relative levels of wealth, the Central Valley region has the highest number of persons per household while the San Francisco and Mid-Coast region has the lowest number. Details follow. For each measure there is a bar chart and table providing the results for each of the five regions.



Population



California Population, 2016	
The North and Mountains	4,727,599
San Francisco and the Mid-Coast	8,376,386
The Central Valley	2,969,508
LA and the Coast	11,716,710
San Diego and the Desert	11,231,126
California Overall	39,250,017
US Bureau of the Census	

With over 39 million residents,² California is our largest state by far, more than 11 million larger than Texas, the next most populous state, and larger than the combined sum of the populations of the smallest 22 states³ together. The California regions, similarly, are substantially different from each other in terms of population.

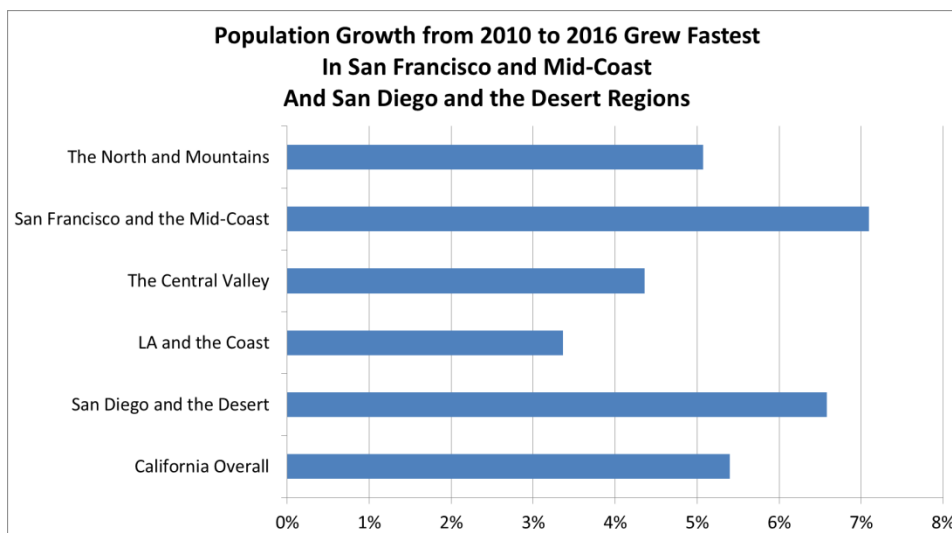
By far, the two largest regions of California in terms of population are Los Angeles and the Coast and San Diego and the Desert. Each has more people than the smallest ten states, combined. Even California's smallest region by population, the Central Valley area, has a population greater than the sum total of the populations of the four smallest states: Wyoming, Vermont, Alaska, and North Dakota.

² US Census Bureau estimates as of July 1, 2016.

³ Including the District of Columbia. If the District is left out of the calculation, it is 21 states.



Population Growth



California Population Growth, 2010-2016 (Percent)	
The North and Mountains	5.1%
San Francisco and the Mid-Coast	7.1%
The Central Valley	4.4%
LA and the Coast	3.4%
San Diego and the Desert	6.6%
California Overall	5.4%

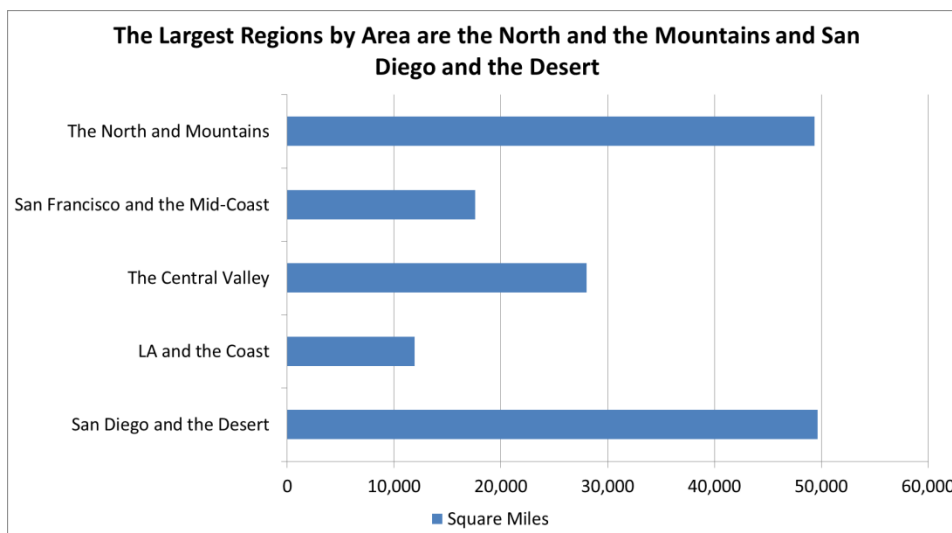
While Los Angeles and the surrounding coastal region is the largest in terms of population, it is not the fastest growing region. That honor goes to San Francisco and the mid-coast area, whose population grew over seven-percent over the five years from 2011 to 2016, as shown in the graph and table below. While the population of California as a whole grew by 5.4-percent, there was substantial variation across the regions, and the Los Angeles area, along with the surrounding coastal areas grew a bit more slowly than the state average, about 3.4-percent.

The other fast-growing region of California over the last half decade is San Diego and the Desert area, with an increase of 6.6-percent. The remaining areas of the state, while they continued to grow at a substantial pace, saw population increases at less than the state overall average.

The California regions are also substantially different in their physical size and in the density, or degree of crowdedness of the people within them. The largest regional areas are San Diego and the Desert along with the North and the Mountains.



Land Area



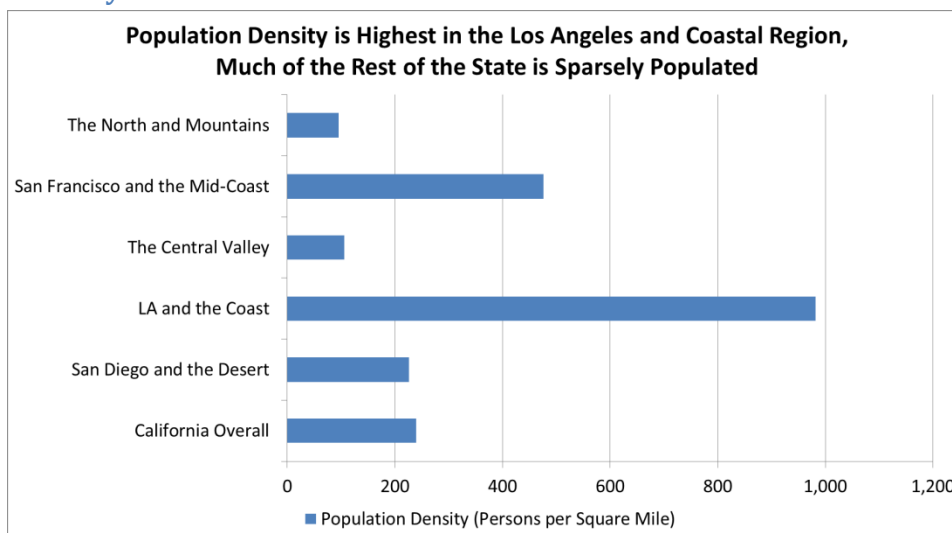
California Land Area (Square Miles)	
The North and Mountains	49,348
San Francisco and the Mid-Coast	17,576
The Central Valley	28,045
LA and the Coast	11,935
San Diego and the Desert	49,667
California Overall	155,779
US Bureau of the Census	

California is the third largest state in terms of total land area (behind Alaska and Texas), consisting of over 155,000 square miles in total. People who live in California's cities and along the coast sometimes may not appreciate the magnitude of California's mountain and desert areas. Both the area of the San Diego and Desert region and the North and Mountain region are about 50,000 square miles each. By comparison, the eight smallest states have a combined land area of about 48,000 square miles in total.⁴

⁴ The combined land area of Rhode Island, Delaware, Connecticut, Hawaii, New Jersey, Massachusetts, New Hampshire, and Vermont, is 47,572 square miles, according to the US Bureau of Census.



Population Density



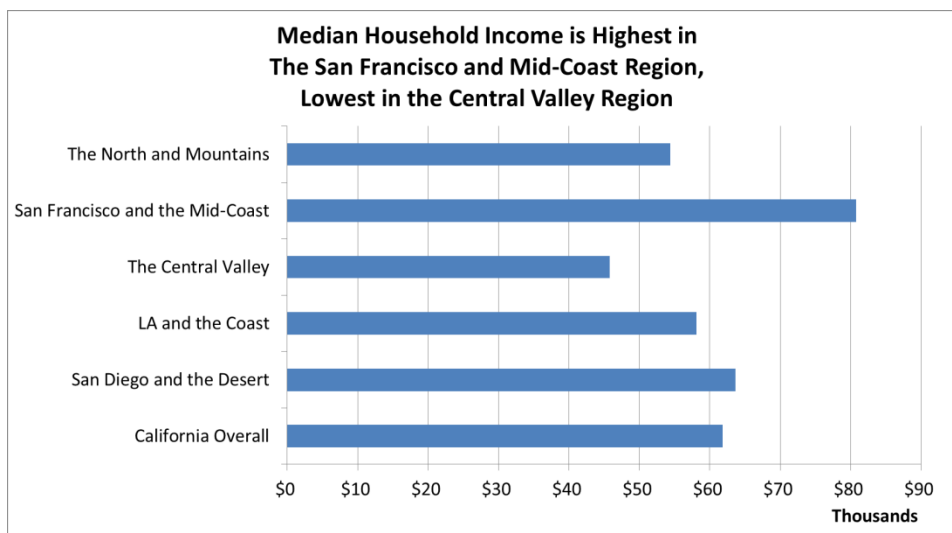
Population Density	
The North and Mountains	96
San Francisco and the Mid-Coast	477
The Central Valley	106
LA and the Coast	982
San Diego and the Desert	226
California Overall	239
Persons per Square Mile	

With many of the people of California crowded into cities and living along the coast, there is great diversity among the regions in the population density of the regions. The region including Los Angeles and the surrounding coastal counties is by far the most densely populated area, with nearly 1,000 persons inhabiting each square mile of territory. That is an order of magnitude greater than the population density in the least crowded region consisting of the North and the Mountain areas with less than 100 persons per square mile!

Even the region including San Francisco and the Mid-Coast area is only half as densely populated as the Los Angeles and coastal counties area. Finally, the region including San Diego and the Desert Counties is in the middle, about the same level of density of population as the state as a whole.



Median Household Income



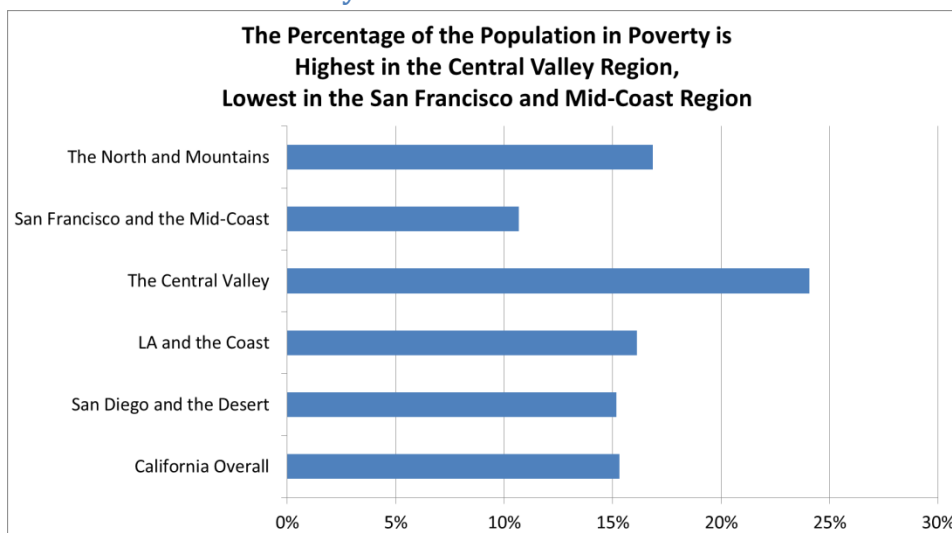
Median Household Income	
The North and Mountains	\$54,400
San Francisco and the Mid-Coast	\$80,795
The Central Valley	\$45,777
LA and the Coast	\$58,135
San Diego and the Desert	\$63,632
California Overall	\$61,818
Dollars per Year per Household	

Californians comprise a richly diverse society, and it should be expected that there are differences in every measurable demographic feature, not only from region to region, but in closer measures, too. Even between counties, between cities within counties, and even from neighborhood to neighborhood, there are differences to be measured. The following are indicative differences among the regions that may shed light on utility services.

The richest region, in terms of median household income, is the San Francisco and Mid-Coast region. Poorest, by contrast, is the Central Valley region, with a median less than 60-percent as great. The North and Mountains region is wealthier than the Central Valley region, but still well below the state's median of \$61,818. The remaining two regions, San Diego and the Desert and Los Angeles and the nearby Coastal Counties, are close to the state median.



Percentage of Households in Poverty

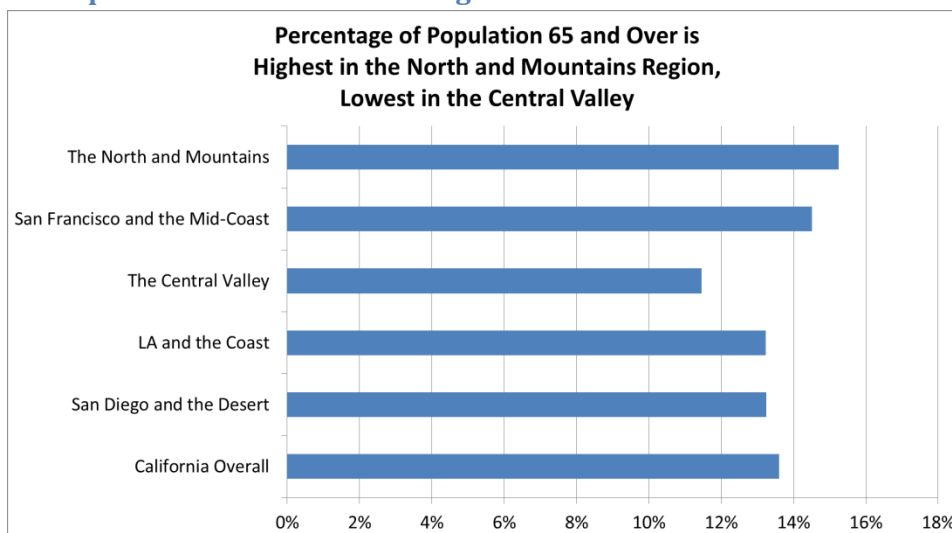


Poverty Percentage	
The North and Mountains	16.8%
San Francisco and the Mid-Coast	10.7%
The Central Valley	24.1%
LA and the Coast	16.1%
San Diego and the Desert	15.2%
California Overall	15.3%
Percentage of Population in Poverty	

Almost exactly the opposite of the median income statistics (a measure of wealth) is the percentage of the persons who meet the federal definition of poverty. And the statistics bear this out. The bar graph is very dramatic, showing that the highest incidence of poverty is in the Central Valley region, with almost a quarter of the population falling below the poverty line. In the North and Mountains region, about 17-percent are poor, while the two southern regions, Los Angeles and the Coast, and San Diego and the Desert, have rates of about 15- to 16-percent. Finally, the San Francisco and Mid-Coast region has the lowest incidence of poverty, about 11-percent. Overall, about 15-percent of Californians are in poverty.



Percentage of Population over 65-Years of Age



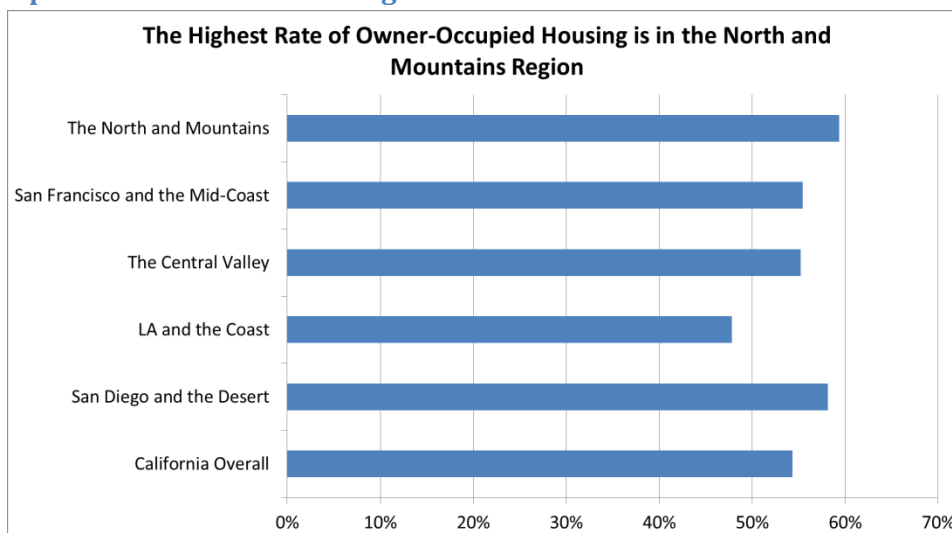
Percentage of Population 65 and Older	
The North and Mountains	15.2%
San Francisco and the Mid-Coast	14.5%
The Central Valley	11.5%
LA and the Coast	13.2%
San Diego and the Desert	13.2%
California Overall	13.6%

California's regions are fairly different in their age distributions as well. There is a higher percentage of the population over 65 years old in the North and Mountains region than in other parts of the state, and the percentage is the lowest in the Central Valley region.

The differences in the percentage of the population over 65 years old are not as dramatic as those for income and poverty, but still they are telling. From this view, it appears that the North and Mountains area is the oldest part of the state, while the Central Valley region is the youngest. This result may reflect multiple characteristics, including the fact that the North and Mountains region may be a more popular place for people to retire from the cities.



Owner-Occupied Households Percentage



Owner-Occupied Percent of Households	
The North and Mountains	59.3%
San Francisco and the Mid-Coast	55.4%
The Central Valley	55.2%
LA and the Coast	47.8%
San Diego and the Desert	58.1%
California Overall	54.3%

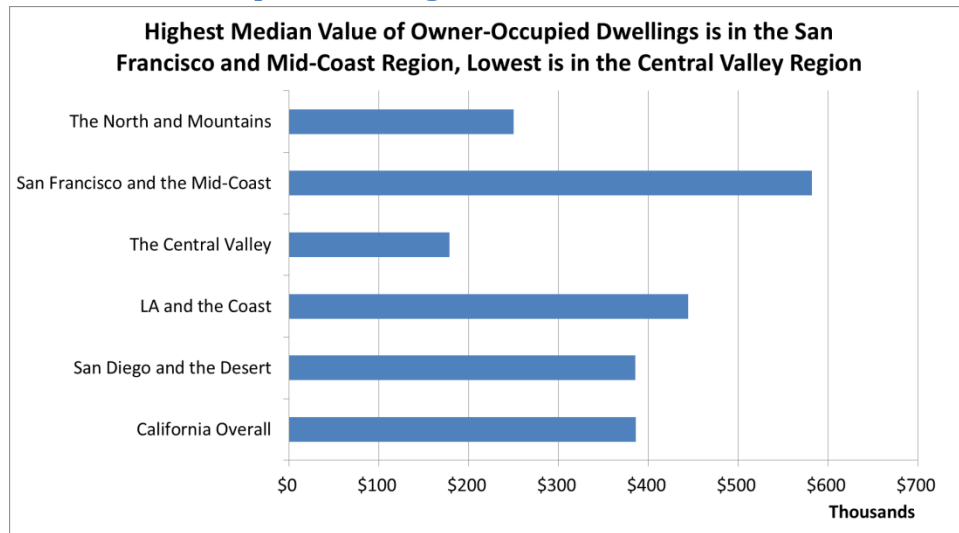
A similar phenomenon may be at work in the measure of owner-occupied housing. The highest percentage of owner occupancy is in the North and Mountains region.

The lowest owner-occupied percentage is for Los Angeles and the Coastal counties, perhaps reflecting the traditional preference for apartments in the most densely populated areas. The Los Angeles and Coastal Counties region, recall, is the most densely populated region in the state. The Central Valley also presents a lower percentage of owner-occupied housing than the state average. In that case, the percentage may be more a reflection of that region's greater incidence of poverty.

While the greatest percentage of home ownership is in the North and Mountains and the San Diego and Desert regions, the greatest value of the homes is in the San Francisco and Mid-Coast counties region.



Median Value of Owner-Occupied Dwellings

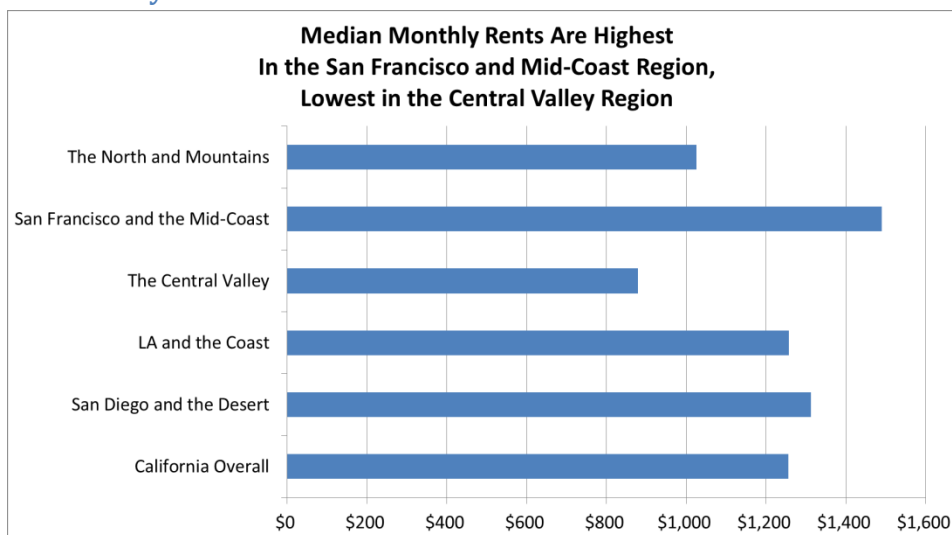


Median Value of Owner-Occupied Households	
The North and Mountains	\$249,588
San Francisco and the Mid-Coast	\$581,813
The Central Valley	\$178,420
LA and the Coast	\$444,058
San Diego and the Desert	\$385,439
California Overall	\$385,500

The value of owner-occupied homes is in the San Francisco and Mid-Coast counties region, about \$580,000, followed by the region including Los Angeles and its surrounding coastal counties, at \$440,000. The San Diego and Desert region matches the level for the state overall, about \$385,000. Finally, the lowest median values are found in the North and Mountains region (\$250,000) and the Central Valley region (\$178,000).



Median Gross Monthly Rent



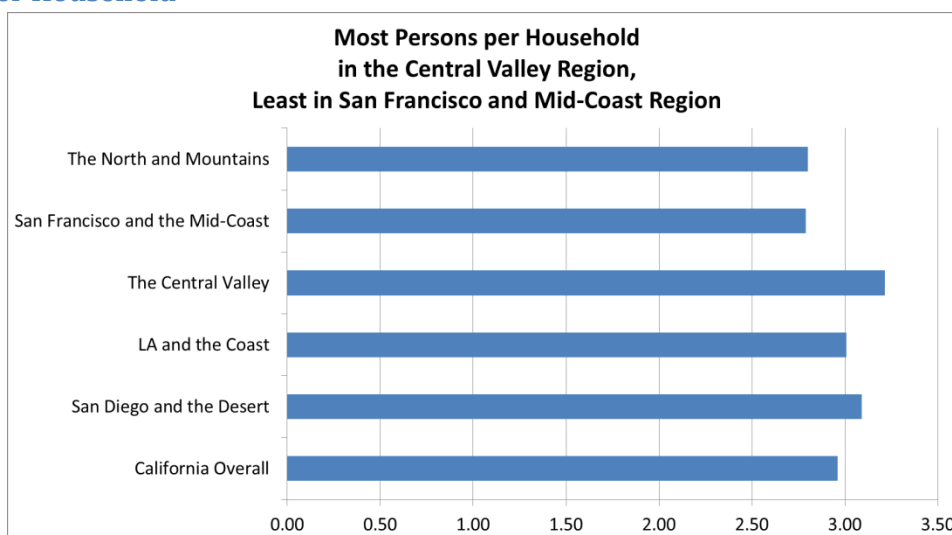
Median Gross Monthly Rent	
The North and Mountains	\$1,025
San Francisco and the Mid-Coast	\$1,490
The Central Valley	\$879
LA and the Coast	\$1,256
San Diego and the Desert	\$1,313
California Overall	\$1,255

Rental costs follow a pattern similar to the costs of owner-occupied housing: The highest rents are found in the San Francisco and Mid-Coast region, and the lowest in the Central Valley.

The median monthly rent in the San Francisco and Mid-Coast region is nearly \$1,500 per month, with the San Diego and Desert region and the Los Angeles and Coast regions close behind at about \$1,300 and \$1,260. The North and Mountains region has a median rent of about \$1,000, and the Central Valley region is the most economical to rent at about \$900 per month.



Persons per Household



Persons per Household	
The North and Mountains	2.80
San Francisco and the Mid-Coast	2.79
The Central Valley	3.21
LA and the Coast	3.01
San Diego and the Desert	3.09
California Overall	2.96

The number of persons per household varies less among the regions than either the value of owner-occupied housing or the cost of rent. Even so, the pattern is consistent with incomes and costs: The highest number of persons per household is in the Central Valley region, about 3.2 persons per household. The average for California overall is just under three persons per household. The smallest number of persons per household is found in the two regions of San Francisco and Mid-Coast and the North and Mountain, each with about 2.8 persons per household. The difference between the lowest and highest regions is four-tenths of a person per household.

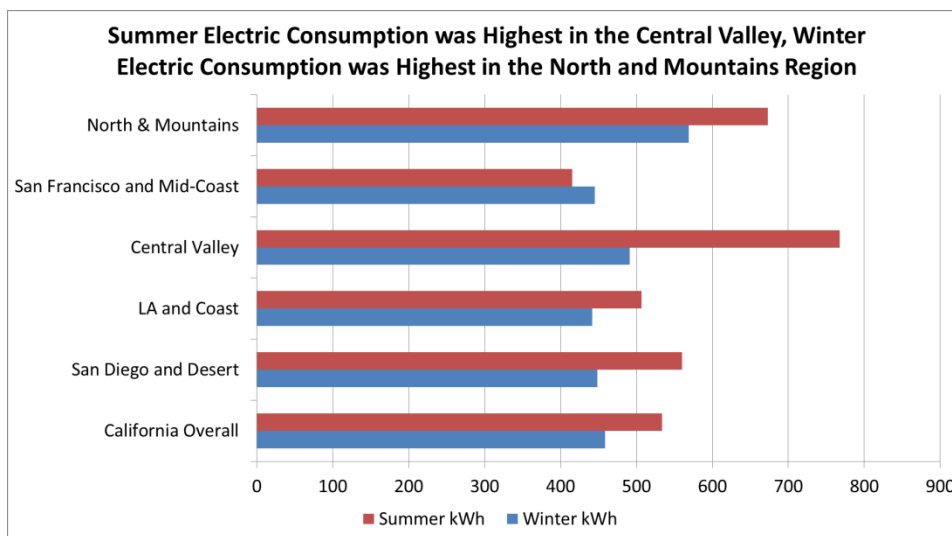


Utility Services – Differences across California’s Regions

Electric Usage and Bills

Electric service is available virtually everywhere in California. But information about electric service, including how much electric service consumers typically consume and how much they pay, is usually provided according to service territories, not according to regions of the state. Researchers can easily access the various reports of investor-owned electric utility service providers to see statistics for the overall service territory. But regional boundaries are not consistent with service territories. The statistics presented here for regions are built up from information provided by the three large investor-owned CPUC-jurisdictional electric service providers: Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company. Those entities provided the CPUC with anonymized 2016 monthly bill information associated with geographic information at the level of Zip Codes. We aggregated the information up to the level of the five regions, and we present the information here.

To be clear, there are other electric energy service providers in California that are not jurisdictional to the Commission. Examples include large municipal systems such as the Los Angeles Department of Water & Power (LADWP) and the Sacramento Municipal Utility District (SMUD). Numbers shown below do not include information regarding the government-owned municipal electric systems. Also not included are other non-jurisdictional entities such as the Imperial Irrigation District. The tables below are for residential customers of the three large investor-owned electric utilities only.



Average Electric Service Consumption (kWh)			
	Summer	Winter	Percent Difference
North & Mountains	673	569	-15%
San Francisco and Mid-Coast	415	445	7%
Central Valley	767	491	-36%
LA and Coast	506	442	-13%
San Diego and Desert	560	449	-20%

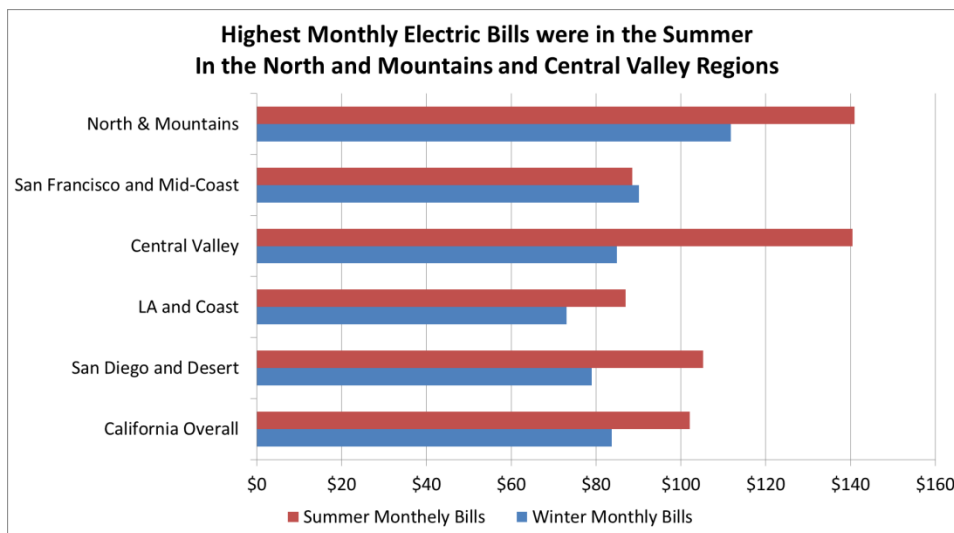


California Overall	534	459	-14%
--------------------	-----	-----	------

During the summer months, residential customers in the Central Valley region use the most electric service. And they pay the highest summer electricity bills.

Average monthly residential consumption of electric service in the summer-months is highest in two regions, the Central Valley region and the North and Mountains region, at 767 kWh per month and 673 kWh per month, respectively. The residential customers in the San Diego and Desert Region and the Los Angeles and Coastal Counties region use substantially less on average, at 560 kWh per month and 506 kWh per month. And finally, the lowest average summer electric usage is in the San Francisco and Mid-Coast Counties region, at 415 kWh per month.

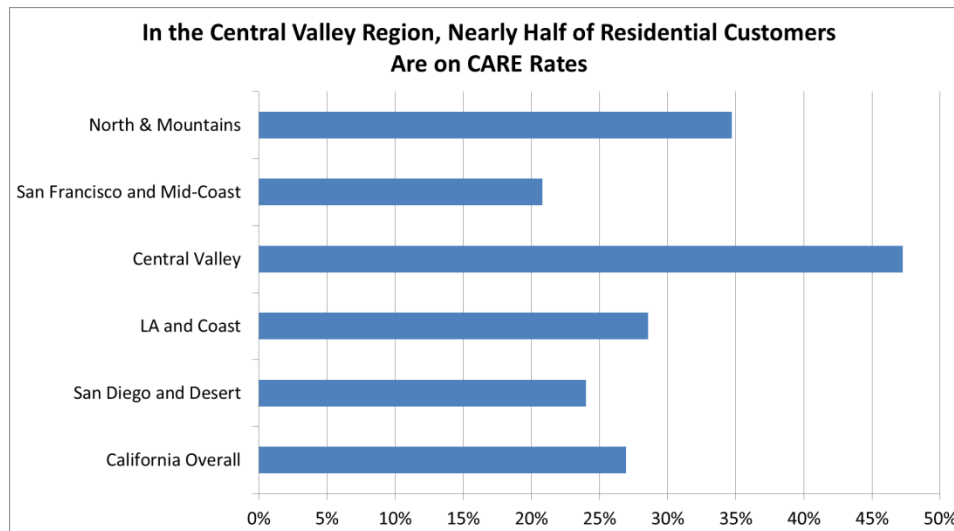
The regional pattern of winter electrical consumption in the winter months is similar to the summer pattern, except that the North and Mountains region takes the lead in consumption with an average of 569 kWh per month while the Central Valley region moves to second place, with an average of 491 kWh per month. The remaining three regions are almost identical in their winter consumption levels, all within the range of 442-449 kWh per month. One anomaly is that electrical consumption in the San Francisco and Mid-Coast region is slightly higher in the winter months than in the summer months (445 kWh in the winter vs 415 kWh in the summer, about seven-percent higher), while all of the other regions have lower consumption in the winter than in the summer, about 14-percent lower overall.



<u>Summer Winter Electric Bills -- \$/Month</u>			
	Summer	Winter	Percent Difference
North & Mountains	\$140.96	\$111.83	-21%
San Francisco and Mid-Coast	\$88.52	\$90.17	2%
Central Valley	\$140.45	\$84.91	-40%
LA and Coast	\$87.03	\$73.06	-16%
San Diego and Desert	\$105.21	\$79.03	-25%
<i>California Overall</i>	<i>\$102.13</i>	<i>\$83.74</i>	<i>-18%</i>

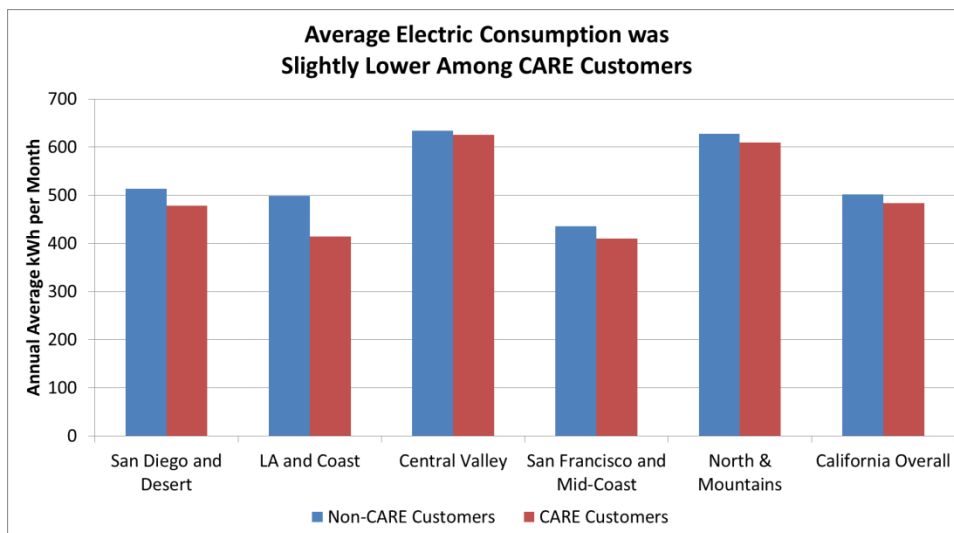
The average residential summer bills stack up in a similar way compared to the levels of summer consumption, with the Central Valley region and the North and Mountains region having the highest monthly bills, at about \$140 each. The San Diego and Desert region was lower, at \$87. And the Los Angeles and the Coastal region and the San Francisco and Mid-Coast region again follow up at about \$87 and \$89 per month, respectively.

The bills for winter electric service are mostly much lower than the summer bills, about 18-percent lower over the state. But they are particularly lower in the Central Valley region, 40-percent lower than the summer bills. They also follow a different pattern from the summer bills and from the pattern of consumption. The North and Mountain region still has the highest average bills at \$112. But the second-highest bills are in the San Francisco and Mid-Coast region at \$90 per month in the winter. That region's bills are actually slightly higher in the winter than they are in the summer, along with their slightly higher levels of electric consumption in the winter. The remaining two regions, San Diego and the Desert and Los Angeles and the Coast, have average winter bills of \$79 and \$73, respectively.



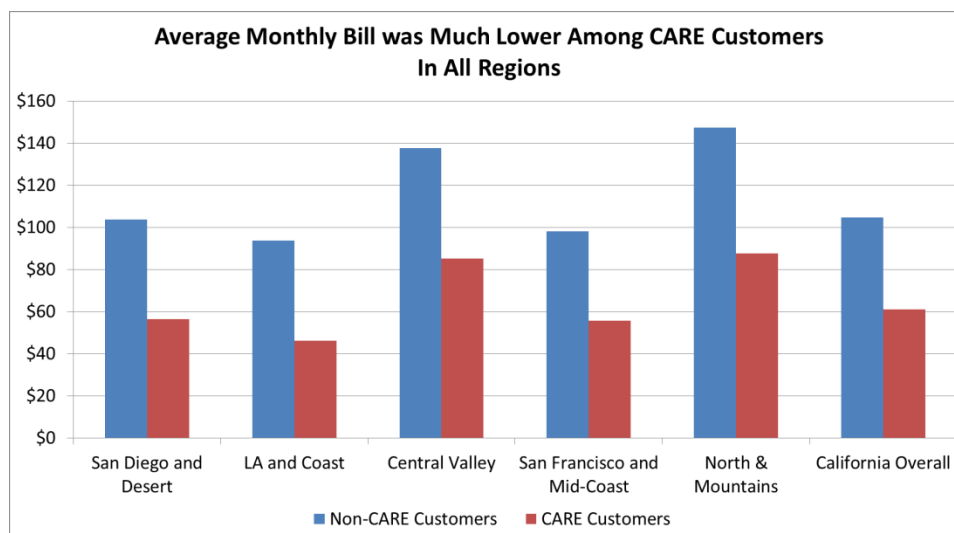
<u>Percentage of Residential Customers On CARE Rates</u>	
North & Mountains	35%
San Francisco and Mid-Coast	21%
Central Valley	47%
LA and Coast	29%
San Diego and Desert	24%
California Overall	27%

Among California residential electric service customers of the regulated utilities as a whole, just over one-fourth were on California Alternative Rates for Energy (CARE) rates, 27-percent. The region with the highest penetration of CARE customers was the Central Valley, with 47-percent, nearly half of residential customers on the CARE rates. In the North and Mountains region, 35-percent were on CARE rates. The Los Angeles and Coast region had a penetration rate of 29-percent, close to the state-wide average, while the two remaining regions, San Diego and the Desert and San Francisco and the Mid-Coast, were below the state average at 24-percent and 21-percent, respectively.



CARE vs Non-Care Electric Consumption (kWh)			
	Non-CARE	CARE	CARE Percent Difference
North & Mountains	628	609	-3%
San Francisco and Mid-Coast	435	410	-6%
Central Valley	634	626	-1%
LA and Coast	498	415	-17%
San Diego and Desert	513	478	-7%
<i>California Overall</i>	<i>502</i>	<i>483</i>	<i>-4%</i>

In all of the regions of California, CARE customers were found to use slightly less electric service on average, about four-percent less for the overall state-wide numbers. The largest percentage difference was in the Los Angeles and Coast region where CARE customers used about 17-percent less electric service than their non-CARE counterparts.

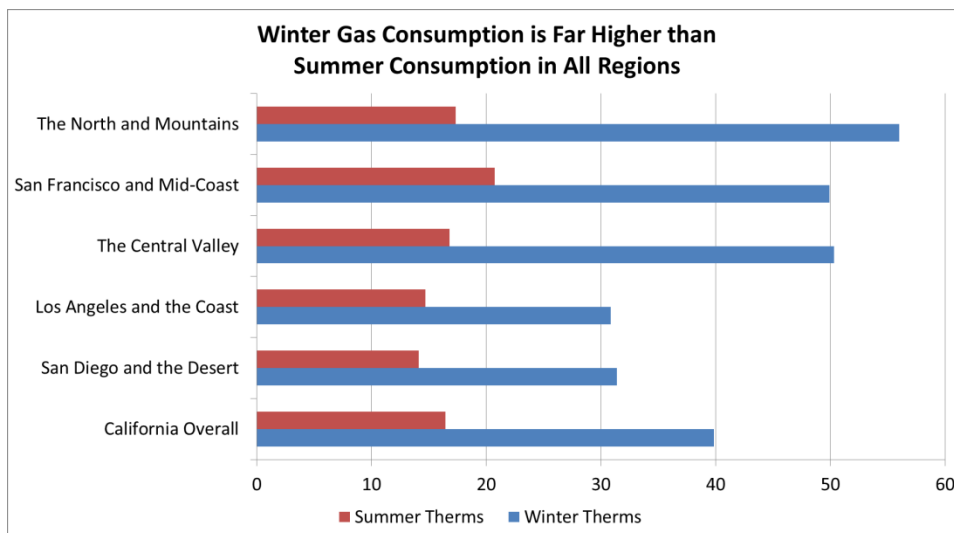


Non-CARE vs CARE Electric Service Monthly Bills			
	Non-CARE	CARE	CARE Percent Difference
North & Mountains	\$147.25	\$87.50	-41%
San Francisco and Mid-Coast	\$98.15	\$55.76	-43%
Central Valley	\$137.62	\$85.25	-38%
LA and Coast	\$93.78	\$46.07	-51%
San Diego and Desert	\$103.60	\$56.37	-46%
California Overall	\$104.79	\$61.12	-42%

While on average the CARE customers used slightly less electric service than their non-CARE counterparts, their bills were substantially lower than the non-CARE customers. That is the purpose of the CARE program, of course. Still, it is dramatic to see the savings achieved. Overall in the state, the CARE customers saved about 42-percent from the bills of the non-CARE customers. The greatest difference in the bills, more than half (51-percent!), was in the Los Angeles and Coast regions where CARE customers’ consumption levels were furthest below those of the non-CARE customers.

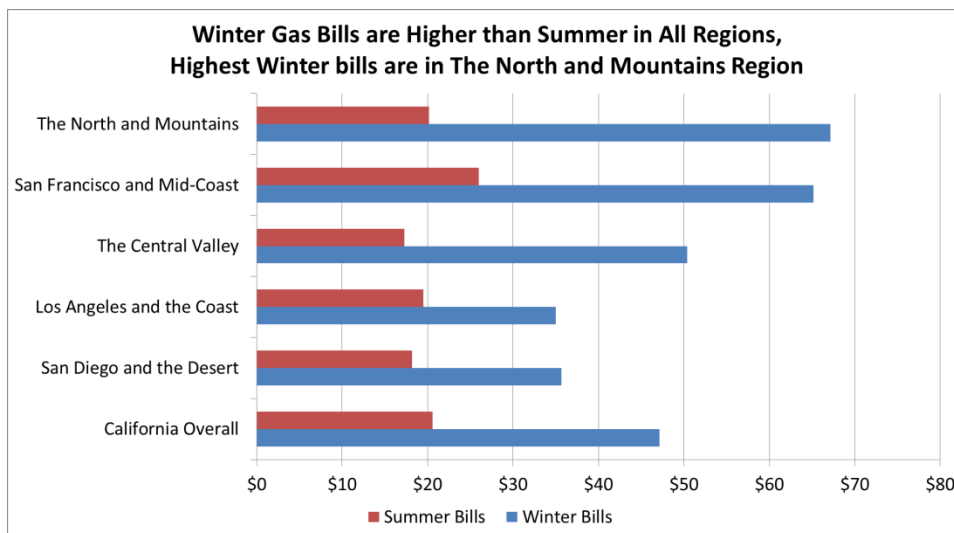
Gas Usage and Bills

Gas service is available over much of California, more available in metropolitan areas and suburbs than in less developed parts of the state. Researchers can access the various reports of investor-owned gas service providers to see statistics for the service territories of those firms. But the regional boundaries in this report are not consistent with the service territory boundaries of the utility companies. The statistics presented here are built up from information provided by the three investor-owned CPUC-jurisdictional gas utility companies: Pacific Gas & Electric Company, San Diego Gas & Electric Company, and Southern California Gas Company. Those entities provided the CPUC with anonymized 2016 monthly bill information associated with geographic information at the level of Zip Codes. We aggregated the information up to the level of the five regions, and we present the information here.



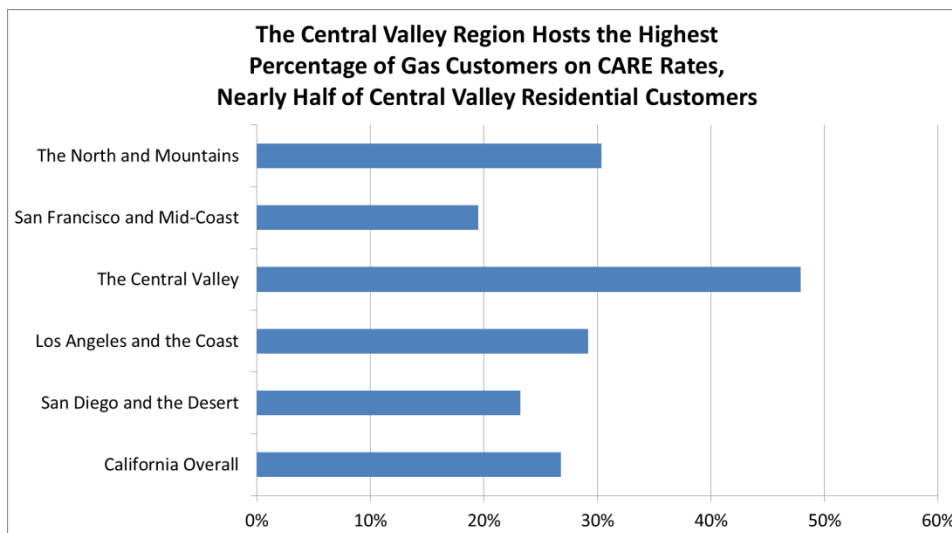
Average Monthly Gas Consumption in California			
	Summer	Winter	Summer Percent of Winter
The North and Mountains	17	56	31%
San Francisco and Mid-Coast	21	50	42%
The Central Valley	17	50	33%
Los Angeles and the Coast	15	31	48%
San Diego and the Desert	14	31	45%
<i>California Overall</i>	<i>16</i>	<i>40</i>	<i>41%</i>
Average Therms per Month			

On average, across the regions, winter-month consumption of gas is 40 therms per month, while summer consumption is only 16 therms per month, about 41-percent as much. This stands to reason, as much of gas usage is for space heating in the colder months. The highest level of winter usage was in the North and Mountains region, 56 therms per month, while the lowest winter consumption was in the two most southern regions, the Los Angeles and Coastal region, and the San Diego and Desert region. In between were the San Francisco and Mid-Coast region and the Central Valley region, both of which saw residential consumption of 50 therms per month in the winter months. In the summer, usage was lower overall, under 20 therms per month in all of the regions except the San Francisco and Central Coast region, which averaged 21 therms.



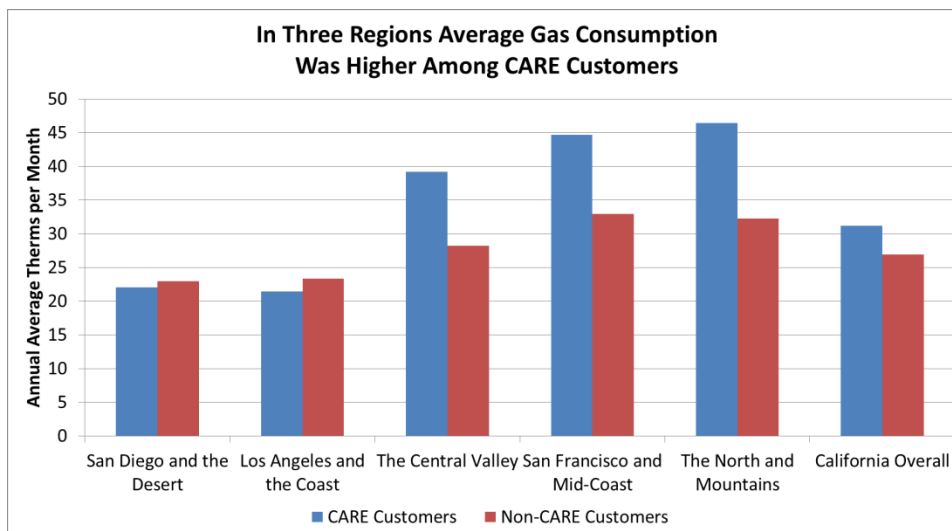
Average Monthly Gas Bills in California			
	Summer	Winter	Summer Percent of Winter
The North and Mountains	\$20.16	\$67.18	30%
San Francisco and Mid-Coast	\$25.99	\$65.17	40%
The Central Valley	\$17.25	\$50.41	34%
Los Angeles and the Coast	\$19.51	\$34.99	56%
San Diego and the Desert	\$18.20	\$35.64	51%
<i>California Overall</i>	<i>\$20.59</i>	<i>\$47.15</i>	<i>44%</i>

As with gas consumption, so with gas bills; winter gas bills were higher than summer bills, with the summer bills averaging only 44-percent of the winter bills. The highest gas bills were for winter service in the North and Mountains area, averaging \$67, with the San Francisco and Mid-Coast area not far behind, at about \$65. Central Valley region winter bills averaged \$50, and the two southern regions averaging \$35 and \$36 per month. Summer bills were much lower, with the bills for the San Francisco and Mid-Coast region averaging \$26 per month, and the other regions averaging \$20 and below.



Percentage of Residential Gas Customers On CARE Rates	
The North and Mountains	30%
San Francisco and Mid-Coast	20%
The Central Valley	48%
Los Angeles and the Coast	29%
San Diego and the Desert	23%
California Overall	27%

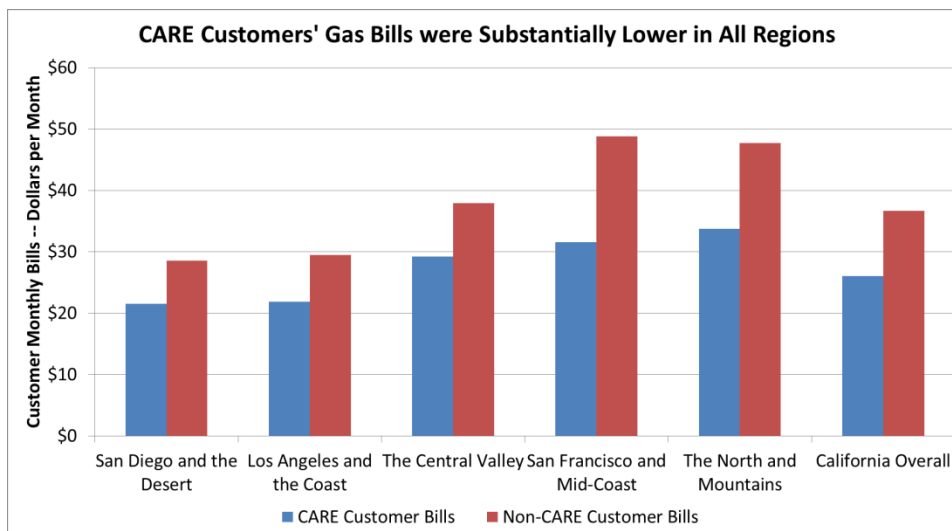
CARE tariffs are available to the low-income customers across the state, and the highest level of penetration is in the Central Valley region, where nearly half of residential gas bills, 48-percent, were served on the CARE tariff. Overall, more than a quarter of customers, 27-percent, were utilizing CARE rates across the state. After the Central Valley region, the North and Mountains region (30-percent) and the Los Angeles and Coast region (29-percent) were next in terms of penetration of CARE rates. The San Diego and Desert region (23-percent) and the San Francisco and Mid-Coast region (20-percent) had the lowest percentage of CARE customers for gas service.



<u>Average Monthly Gas Consumption for CARE and Non-CARE Residential Customers</u>			
	CARE	Non-CARE	CARE Percent Difference
The North and Mountains	46.4	32.2	44%
San Francisco and Mid-Coast	44.7	32.9	36%
The Central Valley	39.2	28.3	39%
Los Angeles and the Coast	21.4	23.3	-8%
San Diego and the Desert	22.0	23.0	-4%
<i>California Overall</i>	<i>31.2</i>	<i>27.0</i>	<i>16%</i>
Therms per Month			

CARE customers consumed more gas on average than non-CARE customers in California. In three regions the difference was positive and substantial, the North and Mountains region, the San Francisco and Mid-Coast region, and the Central Valley region. At 46 therms, the CARE customers in the North and Mountains region consumed 44-percent more than the non-CARE customers. The relative percentages were 36-percent and 39-percent in the others.

The CARE customers in the Los Angeles and Coast region and the San Diego and Desert region used less than their non-CARE counterparts, on average. The differences were smaller, eight-percent less in the Los Angeles and Coast region, and four-percent in the San Diego and Desert region.

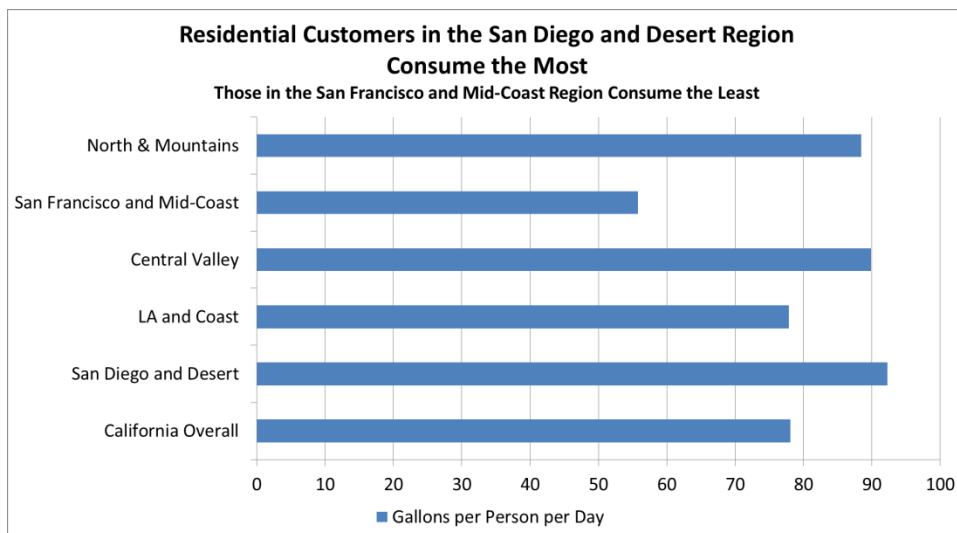


Average Residential Gas Bills for CARE And Non-CARE Customers			
	CARE	Non-CARE	CARE Percent Difference
The North and Mountains	\$33.74	\$47.75	-29%
San Francisco and Mid-Coast	\$31.61	\$48.77	-35%
The Central Valley	\$29.23	\$37.92	-23%
Los Angeles and the Coast	\$21.84	\$29.47	-26%
San Diego and the Desert	\$21.57	\$28.52	-24%
<i>California in Total</i>	<i>\$26.01</i>	<i>\$36.67</i>	<i>-29%</i>

CARE customers benefited from the lower tariff and received lower bills for their gas usage. Overall across the state, bills for CARE customers were 29-percent below those of the non-CARE customers. The highest CARE and non-CARE bills were for the North and Mountains region at about \$34 for the CARE customers and \$48 for the non-CARE customers. The lowest CARE and non-CARE bills were for the San Diego and Desert region at \$22 for the CARE customers and \$29 for the non-CARE customers.

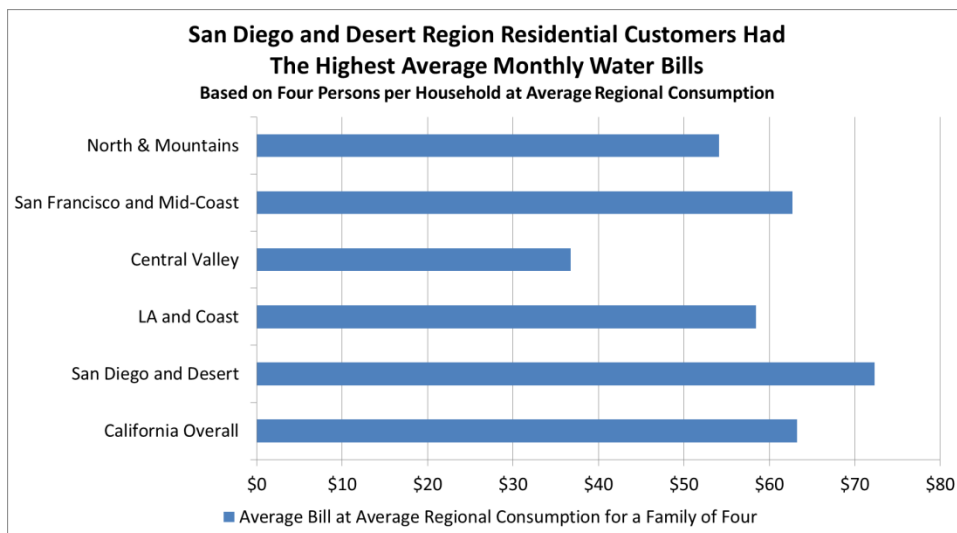
Water Usage and Bills

The CPUC has regulatory jurisdiction over only a small portion of the retail water-service jurisdictions in California. Our agency regulates about 120 companies, of which nine are large “Class-A” utilities that have more than 10,000 connections. In the state of California overall, there are nearly 10,000 water-serving entities that are responsible to report to the State Water Resources Control Board (SWRCB). Therefore, for an analysis of water bills we relied on a database from the SWRCB of annual water reports for the most recent year, 2015. Further limiting the analysis for purposes of data quality, we did not include information from the smallest water agencies, those with fewer than 100 connections, due to questions about data integrity. We limited our analysis to reports for systems with more than 100 customers. The following is built up from reports of about 700 agencies that serve 100 customers or more. That is more than six times the number of agencies that are jurisdictional to the CPUC.



<u>Per Capita Daily Consumption Estimate</u>	
<u>Gallons /day</u>	
North & Mountains	88.5
San Francisco and Mid-Coast	55.7
Central Valley	89.9
LA and Coast	77.9
San Diego and Desert	92.2
California Overall	78.1

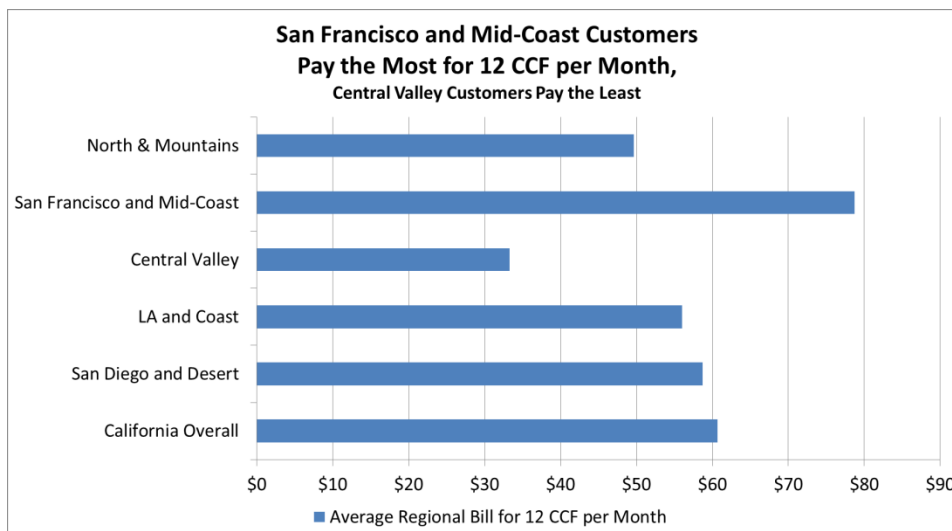
Across California, we found that water consumption averages about 78 gallons per person per day. Water usage is most intense in the San Diego and Desert region at 92 gallons per person per day, with usage in the Central Valley region and the North and Mountains region close behind at 90 and 86 gallons per person per day. Usage in the Los Angeles and Coast region was lower, 80 gallons. And far lower was the usage in the San Francisco and Mid-Coast region, at 56 gallons per person per day.



<u>Average Monthly Bill Calculated for a Family of Four Based on Average Regional Consumption per Day per Person and Reported Charges Across Regions</u>	
North & Mountains	\$54.12
San Francisco and Mid-Coast	\$62.70
Central Valley	\$36.77
LA and Coast	\$58.45
San Diego and Desert	\$72.34
California Overall	\$63.22

The SWRCB reports do not provide exact billing information, so calculating an average bill is not possible from those data. However, the reports do provide calculations of bills at standardized monthly usage levels of six CCF, 12 CCF, and 24 CCF. This report presents calculated average bills for each region based on average rates of use presented on the previous page for a family of four persons and average charges. We applied calculated billing rates for the average of utility systems in each region to develop the chart and table above for consumption at each region's average rate of consumption.

The customers in the San Diego and Desert region would pay the most at the average consumption level for that region, about \$72 per month. San Francisco and Mid-Coast customers would pay the next highest bills, about \$63 per month, even though the average consumption in that region is the lowest among the five regions. The North and Mountains region and the Los Angeles and Coast region would have bills between \$50 and \$60 per month. And finally, the bills in the Central Valley region would average about \$37 per month at their average rate of residential consumption for four persons in a household.



Average Bill for 12 Units Based on Reported Charges	
North & Mountains	\$49.66
San Francisco and Mid-Coast	\$78.72
Central Valley	\$33.32
LA and Coast	\$55.99
San Diego and Desert	\$58.70
California Overall	\$60.66
Units of Water in CCF, or Hundreds of Cubic Feet per Month	

The SWRCB reports include information about bills at standard billing amounts including 12 CCF per month. Twelve CCF is 12 hundred cubic feet, approximately 9,000 gallons. This amount is close to the amount that we estimated from the data of average per-capita consumption. It is a reasonable proxy for a family of four persons at current consumption levels across the state on average.

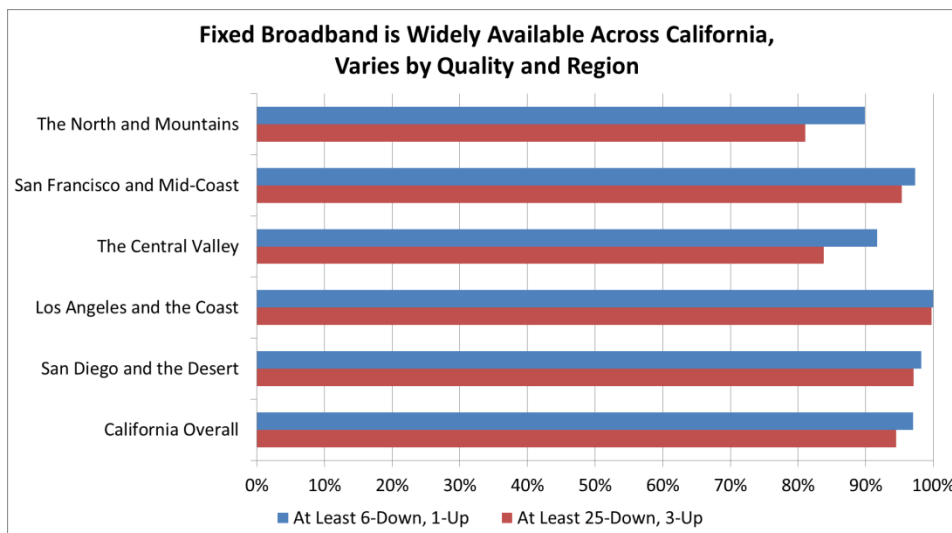
The residents of the San Francisco and Mid-Coast region would pay the highest amount, \$79 for 12 CCF per month. Residents in the Central Valley would pay the least, only \$33 per month for the same quantity of water. In between, the other three regions are closely grouped at \$50 for the North and Mountains region, \$56 for the Los Angeles and Coast region, and \$59 for the San Diego and Desert region. Note that this average bill for an average amount of water service taken does not represent the regional variation in the amount of water taken, but it provides a close look at what an average California family would pay for the same consumption regardless of where it took place.

Broadband Availability and Subscriptions

Broadband service is not regulated in the same way as gas, electric, and water service. Additionally, providers' footprints are depicted in slightly different manners depending on which agency is collecting the data. Both the Federal Communications Commission (FCC) and the CPUC collect broadband availability data from broadband providers in a similar manner. Providers submit Form 477 to the FCC on a semiannual basis while the CPUC collects broadband data on an annual basis (in certain instances the providers submit the exact same data). Those reports provide fixed broadband service availability



and fixed broadband subscriptions for specific geographic areas, at the level of Census Blocks (note the FCC collects subscriber data at the census tract level, while the CPUC ordered broadband providers in December 2016 to submit subscription data at the census block level.⁵ CPUC analysts assembled the information to form averages for the five defined regions, and we provide both broadband availability and broadband subscriptions for the regions.



Percentage of Households Located in Census Blocks Where Fixed Broadband is Available to at least One Household⁶		
	6-Down, 1-Up	25-Down, 3-Up
The North and Mountains	90%	81%
San Francisco and Mid-Coast	97%	95%
The Central Valley	92%	84%
Los Angeles and the Coast	100%	100%
San Diego and the Desert	98%	97%
California Overall	97%	94%

The first and possibly the most important fact about California's broadband availability situation is that fixed broadband service is available almost everywhere that people live. Overall across California, 97-

⁵ The CPUC's Communications Division now uses subscriber data at the census block level as part of its validation efforts. Completely validated data reflecting December 31, 2016 was not yet ready for use, so PPD staff relied on data that was not yet validated, along with the FCC data.

⁶ Note that since broadband availability data are reported at the census block level, they lead to the presumption that if a broadband provider offers service to one household in a census block, it offers service to all households within that block. It is common that not all households in census blocks are offered service by a provider, especially in rural areas. This presumption is somewhat muted with validated data to the extent that reported unserved households or no-subscribers at served speeds are the cause for census blocks to have been deemed unserved. This partially explains the difference between the 97-percent non-validated availability result versus the subsequently available validated data showing 96-percent availability at 6/1 Mbps. In the former, availability is overstated (Type I error) whereas with the latter availability may be understated (Type II error). Explanation of the validation methodologies employed is available at <http://www.cpuc.ca.gov/General.aspx?id=2529>

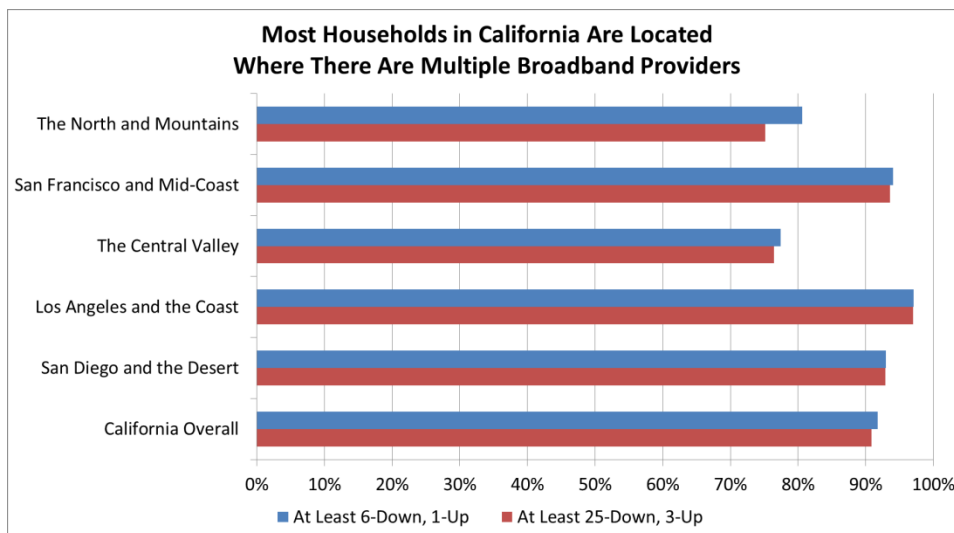


percent of households are located in Census Blocks where basic fixed broadband, is available at speed of at least 6 mbps down and 1 mbps up, the threshold for determining “served” status under the California Advanced Services Fund program, which awards grants to broadband providers to build broadband Internet infrastructure in unserved areas (mostly rural). And 94.5-percent of households are located in Census Blocks where it is available at the rate of 25 mbps down and 3 mbps up, the FCC standard for “advanced services.”⁷ We note that higher speeds improve the performance of video streaming services from companies like Netflix and Amazon, as well as live-video feeds from companies like Facebook and Twitter. While Netflix recommends a five Mbps connection for high definition video streaming, households that include multiple end-users using multiple devices to access multiple services at the same time may find that download speed inadequate. A significant justification cited by the FCC in its 2015 Broadband Progress Report, in creating the new 25/3 benchmark, was that households may be comprised of multiple individuals using multiple devices.⁸

⁷ The FCC explains the difference between “broadband” and “advanced telecommunications capability” in Footnote 1 of its 2016 Broadband Progress Report:

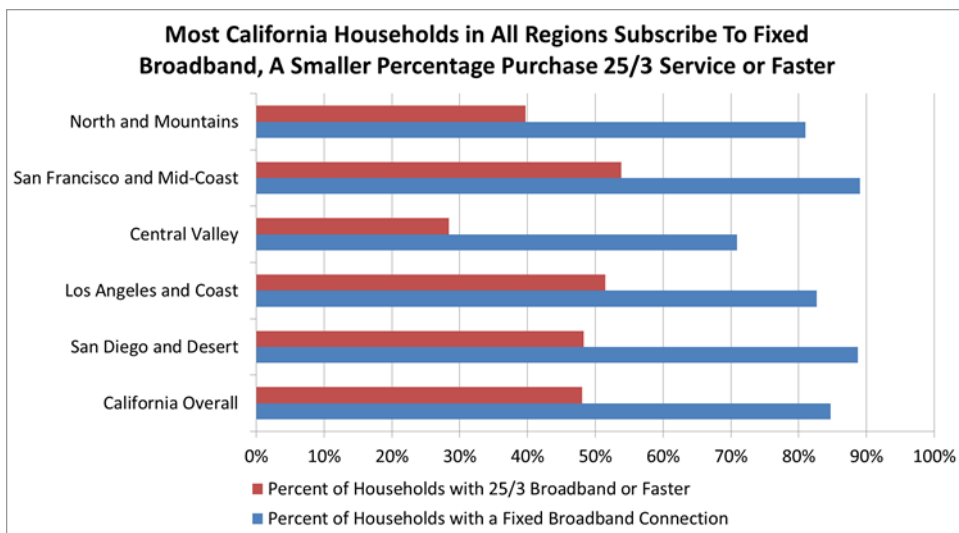
For simplicity in past inquiries, the Commission has sometimes used the term “broadband” to refer to “advanced telecommunications capability.” However, “advanced telecommunications capability” is a statutory term with a definition that differs from the term “broadband” as it is used in other contexts. See 47 U.S.C. § 1302(d)(1) (“The term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”). Thus, in this Inquiry, we do not equate the term “broadband” with the statutory term “advanced telecommunications capability,” but we do necessarily consider the availability of various broadband services that contribute to advanced telecommunications capability in our analysis under the statute.

⁸ *In re Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, (GN Docket No. 14-126), 30 FCC Rcd 1375, released February 4, 2015, at ¶ 3 (2015 Broadband Progress Report). The FCC notes that “[t]he average household has more than 2.5 people, and for family households, the average household size is as high as 4.3.” FCC usage guidelines are available at <https://www.fcc.gov/reports-research/guides/broadband-speed-guide>.



Percentage of Households Located in Census Blocks Where There Are Multiple Providers of Broadband Service		
	6-Down, 1-Up	25-Down, 3-Up
The North and Mountains	81%	75%
San Francisco and Mid-Coast	94%	94%
The Central Valley	77%	76%
Los Angeles and the Coast	97%	97%
San Diego and the Desert	93%	93%
<i>California in Total</i>	92%	91%

Most households in California are located in census blocks where, not only is high-quality fixed broadband available, it is available from multiple providers. Overall, more than nine out of ten households have multiple servers available. There are differences among the regions, and the highest availabilities of multiple choices are in the Los Angeles and Coast region (97-percent), the San Francisco and Mid-Coast region (94-percent), and the San Diego and Desert region (93-percent). Even in the two regions that are more sparsely populated, multiple broadband services provide good quality service in the census blocks where about three-quarters of households are located.



Most California Households Subscribe to Broadband Services at the Home		
	All Connections: Percent	All 25/3 and Above: Percent
North and Mountains	81%	40%
San Francisco and Mid-Coast	89%	54%
Central Valley	71%	28%
Los Angeles and Coast	83%	51%
San Diego and Desert	89%	48%
California Overall	85%	48%

Availability is one thing, are Californians subscribing to broadband service? And are they buying the high-quality 25 mbps-down, 3 mbps-up, service? Overall, about 85-percent of Californian households are subscribing to fixed broadband service, and about half, 48-percent, are purchasing high-quality broadband service. The percentages vary among the regions, with the highest subscription rate for high-quality service found in the San Francisco and Mid-Coast region at 54-percent. In the Los Angeles and Coast region, the number is 51-percent. In the remaining regions the subscription rate is less than half, 48-percent in the San Diego and Desert region, 40-percent in the North and Mountains region, and 28-percent in the Central Valley region. Even in the Central Valley region, which has the lowest subscription rate for high-quality 25 mbps-down, 3 mbps-up broadband service, still seven of ten households, 71-percent, are subscribing to some form of fixed broadband service.

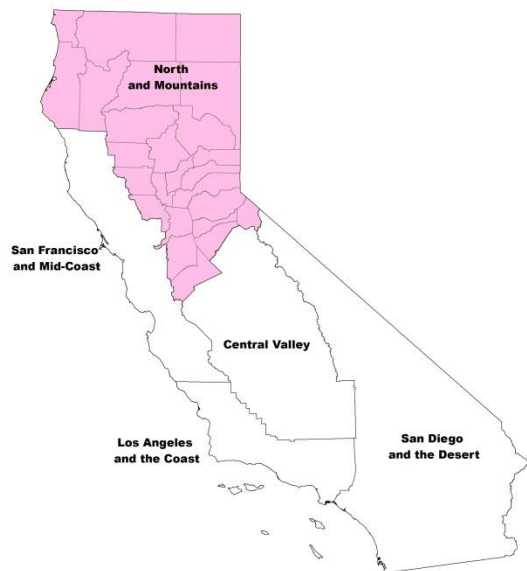


Part 2: Drilling Down by Region

Each of the defined regions has its own set of characteristics that can be looked at as a whole, better to understand it as a whole. The previous section discussed each of the characteristics and the related information about utility services. This section looks at each region individually.

Region 1: The North and the Mountains

The part of California described as “the North and the Mountains” includes 25 counties and stretches from the Oregon border down to Stanislaus County, and from the northern coast over to the Nevada border. It is a huge tract of territory, over 49,000 square miles of land area, nearly one-third of the state’s total land mass. And yet only about 4.7 million people, 12 percent of the state’s residents were living in the region in 2016. Consequently, it is the most sparsely populated region in the state, only 96 people per square mile. The population of this area was growing at about the same rate as the state overall, 5.1-percent over the years 2011 to 2016.



Counties of Region 1
<u>The North and the Mountains</u>
Alpine
Amador
Butte
Calaveras
Colusa
Del Norte
El Dorado
Glenn
Humboldt
Lassen
Modoc
Nevada
Placer
Plumas
Sacramento
San Joaquin
Shasta
Sierra
Siskiyou
Stanislaus
Sutter
Tehama
Trinity
Yolo
Yuba



North and Mountains Region – Information at a Glance		
<u>Category</u>	<u>Statistic</u>	<u>Rank among the Regions</u>
Population, 2016	4,727,599	4
Population Growth, 2010-2016	5.1%	3
Land Area	49,348 square miles	2
Population Density	96 persons per square mile	5
Median Household Income	\$54,400/year	4
Population in Poverty	16.8%	2
65 Years Old and Older	15.2%	1
Owner Occupied Household	59.3%	1
Median Value of Owner-Occupied	\$249,588	4
Median Gross Rent	\$1,025 per month	4
Persons per Household	2.80	4

The North and Mountains region had a relatively low median household income, about \$54,400, about 88-percent of the state median, but still well above the state’s poorest region, the Central Valley region. With a relatively low median income, this region also had a relatively high incidence of poverty, 16.8-percent, higher than the overall state average of 15.3-percent. Again, the area is not the state’s poorest region – the Central Valley has a much higher poverty rate. The percentage of the population above 65-years old was highest in the North and Mountains region, 15.2-percent, well above the state average of 13.6-percent. And with that older population, the percentage of housing units that is owner-occupied is also highest in the North and Mountains region, 59.3-percent. That is five percentage points higher than the state average overall. The median value of owner-occupied units was about \$250,000, well below the state’s median of \$385,000, but still above the poorest region, the Central Valley. The region also ranked fourth in median rents for rental units, \$1,025 per month. Finally, family units were the smallest in the North and Mountains region, 2.80 persons per household, and in the San Francisco and Mid-Coast region, 2.79 persons per household.

Utility Services in the North and Mountains Region

During the winter months, residential electric customers in the North and Mountains region are the largest consumers of electric service. On average, they consume 569 kWh per winter month, 24-percent more than the state overall, and 16-percent more than the average customer in the region with the next-most heavy winter electric consumption, the Central Valley region. In the summer, the two regions are reversed; the Central Valley residential customers use the most electric service, 767 kWh per month, while the customers in the North and Mountains region use 673 kWh per month on average. Still, the summer usage in the North and Mountains region was 26-percent higher than the average residential usage in the state overall.

North and Mountains Region – Residential Electric Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Electric Consumption (kWh)	673 and 569 kWh	2 and 1
Summer and Winter Electric Bills	\$140.96 and \$111.83	1 (tie) and 1
Percentage of Residential Customers on CARE Rates	35%	2
Non-CARE and CARE Electric Consumption (kWh)	628 kWh and 609 kWh	2 and 2
Non-CARE and CARE Electric Bills	\$147.25 and \$87.50	1 and 1



Electric bills in the North and Mountains region were the highest of all of the regions in both the summer months and in the winter months. Reflecting the high electric usage in the North and Mountains region, the average bills were 38-percent higher than the state average in the summer, and were 34-percent higher than the state average in the winter. CARE customers accounted for 35-percent of residential customers in the North and Mountains region, a rate much higher than the state average of 27-percent, but not as high as the Central Valley region's rate of 47-percent. The CARE customers used slightly less electric service than the Non-CARE customers on average, only about three-percent less. Even though the usage was only slightly less, the CARE customers' bills were substantially lower than those of the non-CARE customers on average: \$87.50 per month for the CARE customers, and \$147.25 per month for the non-CARE customers.

North and Mountains Region – Residential Gas Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Gas Consumption (Therms)	17 and 56	2 (tie) and 1
Summer and Winter Gas Bills	\$20.16 and \$67.18	2 and 1
Percentage of Residential Customers on CARE Rates	30%	2
CARE and Non-CARE Gas Consumption (Therms)	46.4 and 32.2	1 and 2
CARE and Non-CARE Gas Bills	\$33.74 and \$47.75	1 and 2

Residents in the North and Mountains region have the highest winter residential gas usage, as well as electric service usage. At 56 therms per month, they are 40-percent higher than the state average in the winter months. Their gas bills follow the same pattern, \$67.18 per month for winter gas bills, about 42-percent higher than the \$47.15 state average bill. While we saw that 35-percent of North and Mountains region electric customers were on CARE rates, we find that about 30-percent of gas customers are on CARE rates. Interestingly, the CARE customers in the North and Mountains region do not consume less gas than the Non-CARE customers; they consume about 44-percent more gas, 46.4 therms for the average CARE customer vs 32.2 therms for the average non-CARE customer. Still, the CARE tariff assists in keeping the CARE customers' monthly gas bills 29-percent lower than the Non-CARE customers' bills, \$33.74 per month for the average CARE customer vs \$47.75 for the average Non-CARE customer.

North and Mountains Region – Residential Water Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Residential Water Consumption (Gallons per Person per Day)	88.5	3
Average Monthly Bill Calculated for a Family of Four at Regional Average Gallons per Person per Day	\$54.12	4
Average Monthly Bill for 12 CCF per Residential Family	\$49.66	4



The water usage among residential customers in the North and Mountains region is right in the middle among the regions, lower than usage in the San Diego and Desert region and the Central Valley region, but higher than in the Los Angeles and Coast region and the San Francisco and Mid-Coast region. Still, at an estimated 88.5 gallons per person per day, the consumption is about 13-percent higher than the estimated statewide average of 78.1 gallons per person per day. Monthly water bills estimated on the basis of estimated family usage indicate that they would be slightly lower than the statewide average in the North and Mountains region, \$54.12 in the region vs. \$63.22 for the statewide average. But instead of taking account of estimated usage across the regions, consider bills all calculated on the same usage across regions. Bills calculated for usage of 12 CCF per month put the North and Mountains region fourth of the five regions, and well below the state average bill for 12 CCF. The estimated bill would be \$49.66 for the average user in the North and Mountains region, compared to \$60.66 for the statewide average.

<u>North and Mountains Region – Residential Broadband Service Indicators</u>		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Percentage of Households with Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	90% and 81%	5 and 5
Percentage of Households with Multiple Providers of Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	81% and 75%	4 and 5
Percentage of Households Subscribing to Fixed Broadband Service (Basic and at least 25-Down 3-Up)	81% and 40%	4 and 4

The North and Mountains region suffers from relatively low broadband availability and subscriptions. About 90-percent of households are located in census blocks where basic broadband service is available, and 81-percent of households are located where high-quality broadband service is available. These are the lowest numbers among the five regions, and they reflect the low population density of the area. The statewide averages are 97-percent and 94-percent, respectively. Even smaller percentages are located in census blocks where there are multiple broadband providers: 81-percent for basic broadband and 75-percent for high-quality broadband. For the state as a whole, those numbers are 92-percent and 91-percent.

In the North and Mountains region, 81-percent of households subscribe to broadband service, including basic and high-quality service combined. Only 40-percent subscribe to high-quality service. Across the state as a whole, 48-percent of households subscribe to high-quality broadband, and the North and Mountains region is not the lowest. In the Central Valley region, only 28-percent of households subscribe to high-quality broadband service. The highest number is 54-percent, and it applies to the San Francisco and Mid-Coast region.



Region 2: San Francisco and the Mid-Coast

The San Francisco and Mid-Coast region consists of 14 coastal and near coastal counties extending from Mendocino County to Monterey County. In 2016 there were nearly 8.4 million residents, about one-fifth of the state's 39 million. Both the Los Angeles and Coast region and the San Diego and Desert regions have more people, over 11 million each. But the San Francisco and Mid-Coast region was the fastest growing region over this last decade, up 7.1-percent since 2010, faster even than the robust statewide average of 5.4-percent. Despite the crowded appearance of San Francisco, Oakland, San Jose, and Silicon Valley, this region is not particularly densely populated overall, 477 persons per square mile. By comparison, the Los Angeles and Coast region is twice as dense at 982 persons per square mile. Nor is the San Francisco and Mid-Coast region as wide open as the North and Mountains region or the Central Valley region where only about one-fourth as many persons inhabit a typical per square mile.



Counties of Region 2
<u>San Francisco and Mid-Coast</u>
Alameda
Contra Costa
Lake
Marin
Mendocino
Monterey
Napa
San Benito
San Francisco
San Mateo
Santa Clara
Santa Cruz
Solano
Sonoma



San Francisco and Mid-Coast Region – Information at a Glance		
<u>Category</u>	<u>Statistic</u>	<u>Rank among the Regions</u>
Population, 2016	8,376,386	3
Population Growth, 2010-2016	7.1%	1
Land Area	17,576 square miles	4
Population Density	477persons per square mile	2
Median Household Income	\$80,795	1
Population in Poverty	10.7%	5
65 Years Old and Older	14.5%	2
Owner Occupied Household	55.4%	3
Median Value of Owner-Occupied	\$581,813	1
Median Gross Rent	\$1,490 per month	1
Persons per Household	2.79	5

The San Francisco and Mid-Coast region is outstanding in terms of median household income. At nearly \$81,000 per household, it was the highest of the five regions, well above the next highest region, the San Diego and Desert region, at just under \$64,000. The statewide median was about \$62,000. Along with a high level of income, this region had the lowest percentage of population in poverty, only 10.7-percent, as opposed to the statewide average of 15.3-percent. The San Francisco and Mid-Coast region is one of the older regions, having the second-highest portion of persons 65-years-old and older among its residents. In the North and Mountains regions, the portion is 15.2-percent, while in the San Francisco and Mid-Coast region it is 14.5-percent, nearly as high. The statewide average is 13.6-percent, and the lowest percentage is in the Central Valley region – only 11.5-percent. The urban dominance of the San Francisco and Mid-Coast region shows in the percentage of owner-occupied housing – 55.4-percent of housing units. Even though it is a relatively rich region, the preponderance of city dwellers means that more are likely to be renters. By contrast, 59.3-percent of residents in the North and Mountains region, and 58.1-percent of residents of the San Diego and Desert region live in owner-occupied units.

Those owner-occupied housing units are by far the most valuable in the state. While the state median value of owner-occupied units is \$385,500, the San Francisco and Mid-Coast region median value was \$582,000 in the 2010-2015-time period over which the Census Bureau’s numbers were calculated. Owner-occupied homes in the Los Angeles and Coastal region were next in value, at \$444,000, and the lowest values were found in the Central Valley, at \$178,000. Rents were highest in the San Francisco and Mid-Coast region, with a median of \$1,490 per month over the 2011-2015-time period. That number is more than \$200 more, nearly 20-percent more, than the statewide median. The San Diego and Desert region was next at \$1,313. The lowest median gross rent was in the Central Valley region, at \$879, about 60-percent of the rent in the San Francisco and Mid-Coast region. Finally, along with being a relatively old region along with the North and Mountains region, the San Francisco and Mid-Coast region shares another characteristic: both have the lowest number of persons per household, at 2.80 and 2.79 persons, respectively. The statewide average is 2.96 persons, and the other three regions are higher, with the highest number of persons per household found in the Central Valley region at 3.21.



Utility Services in the San Francisco and Mid-Coast Region

Electric service consumption in the San Francisco and Mid-Coast region takes a different pattern from most of the rest of the state. Average residential summer consumption (415 kWh per month) was slightly lower than average winter consumption (445 kWh per month). The statewide average was for winter consumption to be 14-percent lower than summer consumption. There is less domestic air conditioning required in this coastal region, and summer consumption is the lowest among the five regions, 22-percent below the state average of 534 kWh per month.

San Francisco and Mid-Coast Region – Residential Electric Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Electric Consumption (kWh)	415 and 445 kWh	5 and 4
Summer and Winter Electric Bills	\$88.52 and \$90.17	4 and 2
Percentage of Residential Customers on CARE Rates	21%	5
Non-CARE and CARE Electric Consumption (kWh)	435 and 410 kWh	5 and 5
Non-CARE and CARE Electric Bills	\$98.15 and \$55.76	4 and 4

The pattern among electric service bills is the same, with average summer and winter bills in the San Francisco and Mid-Coast region almost equal to each other, \$88.52 for summer months and \$90.17 winter months. Interestingly, even though the San Francisco and Mid-Coast average summer consumption was lower than that in the Los Angeles and Coast region (415 kWh vs 506 kWh), the summer bills in the Los Angeles and Coast region were about the same, even a bit lower, at \$87.03 vs \$88.52. And despite the San Francisco and Mid-Coast's winter consumption below the median for the state (445 kWh vs 459 kWh), the average electric bill for the San Francisco and Mid-Coast region was a few dollars more than the state average (\$90.17 vs \$83.74). The difference may be due to the fact that fewer households in the San Francisco and Mid-Coast region are on CARE rates. In fact, only 21-percent of San Francisco and Mid-Coast electric service customers were on CARE rates, the lowest regional percentage among the five regions, and well below the state average of 27-percent. CARE customers used 6-percent less electric service than Non-CARE customers in the San Francisco and Mid-Coast region, about on par with the average of 4-percent less across the state. The CARE customers' bills were \$55.76 on average over the year compared to an average of \$98.15 for the non-CARE customers, a savings of 43-percent.

San Francisco and Mid-Coast Region – Residential Gas Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Gas Consumption (Therms)	21 and 50 Therms	1 and 2
Summer and Winter Gas Bills	\$25.99 and \$65.17	1 and 2
Percentage of Residential Customers on CARE Rates	20%	5
CARE and Non-CARE Gas Consumption (Therms)	44.7 and 32.9 Therms	2 and 1
CARE and Non-CARE Gas Bills	\$31.61 and \$48.77	2 and 1

The San Francisco and Mid-Coast region is a heavy user of natural gas service compared to the other regions of the state. Summer gas usage was highest among the five California regions at 21 therms per month. The statewide average was 16 therms per month. In the winter months, even though the usage



in the North and Mountains region was higher than that of the San Francisco and Mid-Coast region (56 therms vs 50 therms), the California average was 40 therms per month, only 80-percent as much. Summer gas bills, at \$25.99, were the highest in the San Francisco and Mid-Coast region, while the winter gas bills were second-highest, just a couple of dollars lower than those in the North and Mountains region (\$65.17 vs \$67.18).

In keeping with the situation for electric service, only 20-percent of gas service customers in the San Francisco and Mid-Coast region were CARE customers, the lowest of any region and well below the state average of 27-percent. But unlike the situation for electric service, the CARE customers consumed more gas than did the Non-CARE customers, 36-percent more (44.7 therms per month vs 32.9 therms per month). This pattern of greater use among the CARE customers was repeated in three of the five regions, the three regions with the highest usage levels overall: The Central Valley region, the San Francisco and Mid-Coast region, and the North and Mountains region. Still, the CARE customers in the San Francisco and Mid-Coast region saved substantially on their bills compared to the Non-CARE customers paying on average \$31.61 per month compared to \$48.77 per month, a savings of 35-percent.

San Francisco and Mid-Coast Region – Residential Water Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Residential Water Consumption (Gallons per Person per Day)	55.7	5
Average Monthly Bill Calculated for a Family of Four at Regional Average Gallons per Person per Day	\$62.70	2
Average Monthly Bill for 12 CCF per Residential Family	\$78.72	1

San Francisco and Mid-Coast residents were the most parsimonious in their consumption of water among the five regions with an estimated consumption of only 55.7 gallons per person per day (GPD), compared to 78.1 GPD for the state as a whole, and over 90 GPD in the thirstiest region, the San Diego and Desert region. But the average water bill estimated for San Francisco and Mid-Coast households based on that low consumption level and calculated for a family of four persons was not the lowest. In fact, it was second highest at \$62.70, higher than the calculated statewide bill of \$63.22, and nearly as high as the bill for residents of the San Diego and Desert region, a bill based on a much higher consumption level. A bill based on a standard consumption level of 12 CCF per month, that is, the same usage in each region, puts the San Francisco and Mid-Coast region at the highest level among the regions, \$78.72 per month. The statewide bill calculated for 12 CCF per month was \$60.66, only about 77-percent as high.

San Francisco and Mid-Coast Region – Residential Broadband Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Percentage of Households with Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	97% and 95%	3 and 3



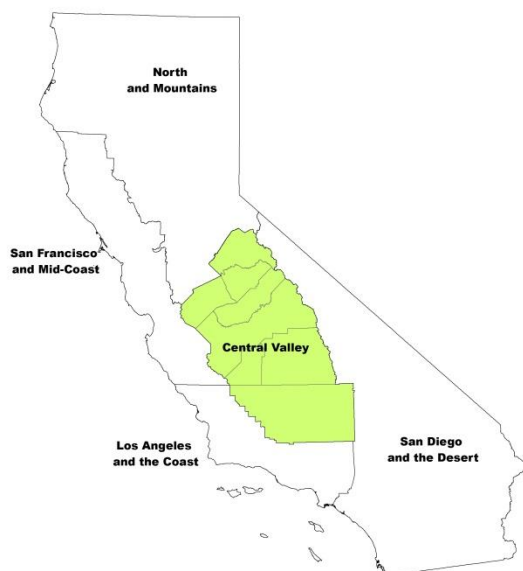
Percentage of Households with Multiple Providers of Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	94% and 94%	2 and 2
Percentage of Households Subscribing to Fixed Broadband Service (Basic and at least 25-Down, 3-Up)	89% and 54%	1 and 1

Broadband service is widely available across California, and it is especially well provided in the San Francisco and Mid-Coast region. Basic broadband was available in the census blocks of 97-percent of the region's households, and high-quality broadband was available in census blocks where 95-percent of households are located. In 94-percent of households' locations there were multiple providers of both basic broadband service and high-quality broadband service. Not only was broadband available, in the San Francisco and Mid-Coast region, a very high portion of households were subscribing to broadband services as well, 89-percent of households subscribed to some form of fixed broadband service, and 54-percent of households subscribed to high-quality broadband service. This region is the only one among the five California regions where more than half of households subscribed to high-quality broadband service.



Region 3: The Central Valley

The Central Valley region consists of eight counties extending from Tuolumne County at the north end to Kern County at the southern edge. It is the smallest among the five regions in terms of the number of people living there. There were just fewer than three million persons, there in 2016 according to the Census Bureau’s estimate. That is less than eight-percent of the state’s population. Over the period from 2010 to 2016, the Central Valley region population grew 4.4-percent, a rate a bit less than the rate of 5.4-percent for the state overall, but faster than the 3.4-percent rate for the state’s most populous region, the Los Angeles and Coast region. Even though it contains a small population, the Central Valley region is a large place, 28,000 square miles of land. The combination of a small population and a large land mass results in a very low population density, only 106 persons per square mile, nearly as sparse as the North and Mountains region. It is the opposite of the Los Angeles and Coast region, where a large population is crowded together.



Counties of Region 3
<u>The Central Valley</u>
Fresno
Kern
Kings
Madera
Mariposa
Merced
Tulare
Tuolumne



Central Valley Region – Information at a Glance		
<u>Category</u>	<u>Statistic</u>	<u>Rank among the Regions</u>
Population, 2016	2,969,508	5
Population Growth, 2010-2016	4.4%	4
Land Area	28,045	3
Population Density	106 persons per square mile	4
Median Household Income	\$45,777	5
Population in Poverty	24.1%	1
65 Years Old and Older	11.5%	5
Owner Occupied Household	55.2%	4
Median Value of Owner-Occupied	\$178,420	5
Median Gross Rent	\$879 per month	5
Persons per Household	3.21	1

The median household income in the Central Valley was \$45,777 per year, the lowest among the regions, about 25-percent below the state median of \$61,818. The Central Valley’s poverty rate was 24.1-percent, the highest rate among the five regions, and about nine percentage points higher than the state average of 15.3-percent. The Central Valley region appears to be the youngest region, for the percentage of the population over 65-years-of-age is the smallest, only 11.5-percent, compared to the state average of 13.6-percent and the rate of 15.2-percent in the North and Mountains region. The rate of owner-occupied households is 55.2-percent in the Central Valley region, fourth among the regions but still slightly higher than the state average and well above the rate of 47.8-percent in the Los Angeles and Coast region. The median value of owner-occupied housing in the Central Valley is \$178,420, the lowest among the regions, and correlated with the low median household income level. Similarly, the median rent was lowest in the Central Valley region, too, at \$879 per month, about 70-percent of the statewide median of \$1,255 per month. Finally, in the Central Valley region, more people live together per household on average than in the other regions, 3.21 persons per household, about one-fifth of a person per household higher than the state average.

Utility Services in the Central Valley Region

Residents of the Central Valley region consume more electric service than residents of any other region during the summer months, 767 kWh per month vs the statewide average of 534 kWh. The region’s closest rival in summer electric consumption is the North and Mountains region, whose summer average electric consumption is 673 kWh per month, about 12-percent less. Yet it is the North and Mountains region that has the highest average electric consumption in the winter months. The Central Valley region’s residential average was 491 kWh, the North and Mountains region was 569, and the state average was 459.

Central Valley Region – Residential Electric Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Electric Consumption (kWh)	767 and 491 kWh	1 and 2
Summer and Winter Electric Bills	\$140.45 and \$84.91	1 (tie) and 3
Percentage of Residential Customers on CARE Rates	47%	1
Non-CARE and CARE Electric Consumption (kWh)	634 and 626 kWh	1 and 1
Non-CARE and CARE Electric Bills	\$137.62 and \$85.25	2 and 2



The Central Valley region and the North and Mountains region had the highest summer electric bills; both were about \$140, well over the state average of \$102. However, in the winter months, the Central Valley electric bills were about equal to the state average, \$84.91 vs \$83.74, much lower than the North and Mountains region's average bill of \$112. The Central Valley region has 47-percent of electric utility service customers relying on CARE rates, the highest portion by far of the regions. In the North and Mountains regions it is 35-percent, and the state average is 27-percent. The amount of electric service consumed by the CARE customers in the Central Valley region is about the same as that of the Non-CARE customers, 626 kWh per month vs 634 kWh per month, about one-percent below. But the CARE customers' bills were much lower, \$85.25 on average vs \$137.62 for the Non-Care Customers, about 38-percent less.

Central Valley Region – Residential Gas Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Gas Consumption (Therms)	17 and 50	2 (tie) and 2
Summer and Winter Gas Bills	\$17.25 and \$50.41	5 and 3
Percentage of Residential Customers on CARE Rates	48%	1
CARE and Non-CARE Gas Consumption (Therms)	39.2 and 28.3 Therms	3 and 3
CARE and Non-CARE Gas Bills	\$29.23 and \$37.92	3 and 3

The Central Valley region is less of a stand-out regarding gas utility consumption. Summer average residential customer consumption, at 17 therms per month, is in the middle of the numbers for the regions and is nearly the same as the state average of 16 therms. In the winter, the average consumption level in the Central Valley region is higher, 50 therms per month, but that number is equaled in the San Francisco and Mid-Coast region and surpassed in the North and Mountains region. Average Central Valley region summer gas bills are the lowest regional average in the state, \$17.25, despite consumption near the median. Central Valley regional average winter gas bills are in the middle of the regional averages at \$50.41, and close to the state average of \$47.15.

As is the case with electric utility service in the Central Valley region, nearly half, 48-percent, of gas utility service customers were CARE customers. The next closest region was the North and Mountains regions at 30-percent, and the state average was 27-percent. CARE customers used more gas service than Non-CARE customers in general, 16-percent more in the state average. In the Central Valley region, the CARE customers used 39-percent more than the Non-CARE customers. Only in the North and Mountains region was the CARE usage even higher, 44-percent more than the Non-CARE customers of that region. Still, CARE customers' gas bills were lower than their Non-CARE counterparts across the state, and the Central Valley region shared in that experience with bills 23-percent lower than the Non-CARE customers.

Central Valley Region – Residential Water Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Residential Water Consumption (Gallons per Person per Day)	89.9	2
Average Monthly Bill Calculated for a Family of Four at Regional Average Gallons per Person per Day	\$36.77	5
Average Monthly Bill for 12 CCF per Residential Family	\$33.32	5



Domestic water consumption – gallons per person per day – in the Central Valley region is second-highest among the regions, about 90 gallons. That’s higher than the state average of 78 gallons, but not quite as high as the 92-gallon number for the North and Mountains region. Monthly water bills calculated on average usage, by contrast, are the lowest in the Central Valley region, about \$37 per month compared to statewide average of \$63 and the next-lowest region, the North and Mountains region, at \$54. But even using a standardized consumption level across the regions, 12 CCF per month, the Central Valley region stands out with an average bill of \$33 per month. The next-lowest region is the North and Mountains area, where the average monthly bill for 12 CCF per month was about \$50. And the state average for 12 CCF was about \$61.

Central Valley Region – Residential Broadband Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Percentage of Households with Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	92% and 84%	4 and 4
Percentage of Households with Multiple Providers of Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	77% and 76%	5 and 4
Percentage of Households Subscribing to Fixed Broadband Service (Basic and at least 25-Down, 3-Up)	71% and 28%	5 and 5

Fixed broadband service is generally available in the Central Valley region – provided in the census blocks where 92-percent of households are located. Even reaching for the standard of high-quality broadband service at the 25-down, 3-up level, 84-percent of households are located in census blocks where it is available. These numbers are below the statewide averages of 97-percent and 94-percent, respectively. But they are above the numbers for the North and Mountains region. One aspect of broadband service where the Central Valley region falls behind is in the availability of broadband service from multiple providers. In the Central Valley region, only 77-percent of households are located where multiple providers are serving in the census block. And regarding high-quality service, the number is 76-percent. Finally, the Central Valley region has a low subscription rate for fixed broadband service. Only 71-percent of Central Valley households were purchasing broadband service, the lowest regional average, and 14-percentage points below the statewide average of 85-percent. And only 28-percent were subscribing to high-quality broadband service compared to the statewide average of 48-percent.



Region 4: Los Angeles and the Coast

Four counties – San Luis Obispo, Santa Barbara, Ventura, and Los Angeles – constitute the Los Angeles and Coast region. With more than 11,700,000 people, this region is the most heavily populated of California’s five regions. That constitutes nearly 30-percent of the total California population. The Los Angeles and Coastal area is rivaled closely by the San Diego and Desert region, which accounts for 11,200,000 people. The other regions have far fewer people. Though it is heavily populated, the region is growing the slowest. Over the period from 2010 to 2016, it grew only 3.4-percent, far below the overall statewide rate of 5.4-percent, and most outshined by the San Francisco and Mid-Coast region, which grew 7.1-percent over the same period. Even the Central Valley region grew more quickly, expanding 4.4 percent over the period.

In geographical size, the Los Angeles and Coast region is the smallest, only about 12,000 square miles, less than eight-percent of the state’s land mass. Of course, with the largest population and the smallest land area, the Los Angeles and Coast was the most densely populated region by far. There were 982 persons for each square mile of land mass, more than ten times the ratio in the North and Mountains region and four times the state average of 239 persons per square mile.



Counties of Region 4
<u>Los Angeles and Coast</u>
Los Angeles
San Luis Obispo
Santa Barbara
Ventura



Los Angeles and Coast Region – Information at a Glance		
<u>Category</u>	<u>Statistic</u>	<u>Rank among the Regions</u>
Population, 2016	11,716,710	1
Population Growth, 2010-2016	3.4%	5
Land Area	11,935	5
Population Density	982 persons per square mile	1
Median Household Income	\$58,135	3
Population in Poverty	16.1%	3 (tie)
65 Years Old and Older	13.2%	3
Owner Occupied Household	47.8%	5
Median Value of Owner-Occupied	\$444,058	2
Median Gross Rent	\$1,256 per month	3
Persons per Household	3.01	3

The Los Angeles and Coast region is in the middle among the regions with regard to median household income. Both the San Francisco and Mid-Coast region and the San Diego and Desert region are higher, and both the North and Mountains region and the Central Valley region are lower. At \$58,135 per year, household income in the Los Angeles and Mid-Coast region is below, but close to, the statewide median of \$61,818. Similarly, the region is in the middle regarding the percentage of population in poverty. The statewide average is 15.3-percent, and the Los Angeles and Coast region is just a bit higher at 16.1-percent. The Los Angeles and Coast region is likewise in the middle of the pack regarding the share of elderly in its population.

Both the Los Angeles and Coast region and the San Diego and Desert region have 13.2-percent of the population aged 65-years-and-older. The Central Valley has fewer elderly people, and both the San Francisco and Mid-Coast region and the North and Mountains region have more.

With the highest population density comes the lowest percentage of households owner-occupied. Less than half (47.8-percent) of the Los Angeles and Coast region population reside in owner-occupied housing. For the other regions and for the state as a whole, the numbers are over 50-percent. Owner-occupied housing has a high value in the Los Angeles and Coast region, \$444,000, second highest in the state after the San Francisco and Coast region. For renters, the Los Angeles and Coast region is right in the middle of the regions, third among the five regions and, at \$1,256 per month, almost exactly equal to the state median. Similarly, the region is in the middle regarding the number of persons per household. The Los Angeles and Coast region had 3.01 persons per household while the state median was 2.96 persons.

Utility Services in the Los Angeles and Coast Region

Average electric service consumption in the Los Angeles and Coast region was low compared to other regions during both summer and winter. In the summer months, it was 506 kWh per month, below the state average of 534, but higher than the 415 kWh average in the San Francisco and Mid-Coast region. During the winter months, three regions vie for lowest average electric consumption: San Diego and the Desert at 449 kWh per month, San Francisco and the Mid-Coast at 445 kWh, and Los Angeles and the Coast, the lowest by a tiny fraction, at 442 kWh.

Los Angeles and Coast Region – Residential Electric Service Indicators



<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Electric Consumption (kWh)	506 and 442 kWh	4 and 5
Summer and Winter Electric Bills	\$87.03 and \$73.06	5 and 5
Percentage of Residential Customers on CARE Rates	29%	3
Non-CARE and CARE Electric Consumption (kWh)	498 and 415 kWh	4 and 4
Non-CARE and CARE Electric Bills	\$93.78 and \$46.07	5 and 5

Average monthly bills in the Los Angeles and Coast region were the lowest among the regions, for both summer and winter months. At \$87.03 on average in the summer months, the bills were only slightly lower than those in the San Francisco and Mid-Coast region, \$88.52. They were substantially lower than the state average of \$102.13. All regions' bills, including those of the Los Angeles and Coast region, were lower in the winter months. At \$73.06, the Los Angeles and Coast region kept its place as the lowest. The next lowest region was the Central Valley region, at \$84.91. CARE rates are about representative of the state overall in the Los Angeles and Coast area, 29-percent for Los Angeles and the Coast vs 27-percent for the state. The CARE customers in the Los Angeles and Coast region are substantially conservative in their electric service consumption than are their Non-CARE counterparts, 415 kWh per month for the CARE customers vs 498 kWh per month for the Non-CARE customers on average. That is a 17-percent difference, the largest percentage difference among the five regions. On average across the state, the CARE customers used only about four-percent less. Partly as a result of using less electric service and partly from the benefits of the CARE tariffs, the average monthly bills of the CARE customers in the Los Angeles and Coast region were less than half of the bills of the Non-CARE customers, \$46.07 vs \$93.78. Overall across the state, the difference was 42-percent.

Los Angeles and Coast Region – Residential Gas Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Gas Consumption (Therms)	15 and 31 Therms	4 and 4 (tie)
Summer and Winter Gas Bills	\$19.51 and \$34.99	3 and 5
Percentage of Residential Customers on CARE Rates	29%	3
CARE and Non-CARE Gas Consumption (Therms)	21.4 and 23.3 Therms	5 and 4
CARE and Non-CARE Gas Bills	\$21.84 and \$29.47	4 and 4

Gas consumption was low, both summer and winter, in the Los Angeles and Coast region compared to the other regions. In the summer, gas usage was low across the state at 16 therms per month. In this region it was only 15 therms, fourth of the five regions. The statewide winter number was 40 therms per month, whereas in the Los Angeles and Coast region (and in the San Diego and Desert region) it was only 31 therms. Summer gas utility bills averaged \$19.51 in the region, third among the five regions and about one dollar per month less than the statewide average. In the winter months, the Los Angeles and coast bills were the lowest of all of the regions at \$34.99. The statewide average was \$47.15.

The percentage of gas customers on CARE rates was 29-percent, close to the state average of 27-percent, and in the middle of the five regions. In the Los Angeles and Coast region, the average CARE customer used slightly less gas than the average Non-CARE customer, about eight-percent less. The



monthly bills of the CARE customers, at \$21.84, were about 26-percent less than the average Non-CARE bill of \$29.47.

<u>Los Angeles and Coast Region – Residential Water Service Indicators</u>		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Residential Water Consumption (Gallons per Person per Day)	77.9	4
Average Monthly Bill Calculated for a Family of Four at Regional Average Gallons per Person per Day	\$58.45	3
Average Monthly Bill for 12 CCF per Residential Family	\$55.99	3

Water consumption among the Los Angeles and Coast region households was fourth among the five regions, 77.9 gallons per day per person. That rate was almost exactly the same as the statewide average of 78.1 gallons per day per person. But while the usage rate was fourth among the five, the calculated average bill based on average consumption was right in the middle among the regions, third of five, \$58.45 per month. The California average was \$63.22 per month. A calculated bill based on the standard of 12 CCF per month, calculated for each of the regions keeps Los Angeles and the Coast in the middle of the pack – third among the five regions, \$55.99. The statewide average was only slightly greater, at \$60.66.

<u>Los Angeles and Coast Region – Residential Broadband Service Indicators</u>		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Percentage of Households with Fixed Broadband Available (Basic and at least 6-Down, 1-Up)	100% and 100%	1 and 1
Percentage of Households with Multiple Providers of Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	97% and 97%	1 and 1
Percentage of Households Subscribing to Fixed Broadband Service (Basic and at least 25-Down, 3-Up)	83% and 51%	3 and 2

A benefit of the compact and dense area of the Los Angeles and Coast region is that virtually all households are located in census blocks where fixed broadband service is available. And that extends not only to basic broadband service but to high-quality 25-down, 3-up service. Both availability calculations round up to 100-percent. The statewide averages are 97-percent and 94-percent, respectively. The area also ranks first in the ability to take service from multiple providers of fixed broadband service, at 97-percent for both basic service and high-quality service. The statewide averages are 92-percent and 91-percent. Finally, 83-percent of households subscribe to fixed broadband service in the Los Angeles and Coast area, third among the five regions, and just less than the statewide average of 85-percent. For high-quality broadband, the rate is 51-percent, just greater than the statewide average of 48-percent, and that puts the region in second place after the San Francisco and Mid-Coast region.



Region 5: San Diego and the Desert

The San Diego and Desert region is perhaps the most heterogeneous region of the five California regions reported on here. It includes the urban hub of Orange County and San Diego County. And it also includes the vast eastern stretches of California, such as the Imperial Valley and the desert extending along the Arizona and Nevada borders. In terms of land area, it is the largest region, just barely larger than the North and Mountains region. Nearly 50,000 square miles of land mass, it is nearly 32-percent of the state's total. The San Diego and Desert region includes more than 11 million people, more than a quarter of the state's population, second in numbers only to the Los Angeles and Coast region. This region is the second-fastest growing region in the state, 6.6-percent over the 2010-2016 era, just behind the San Francisco and Mid-Coast region's 7.1-percent, and higher than the state average of 5.4-percent. With so many people, but also with so much land, the San Diego and Desert region is sparsely populated overall, only 226 persons per square mile, most of them packed into the cities in the southwestern corner of the state, and very few in the desert areas.



Counties of Region 5
<u>San Diego and Desert</u>
Imperial
Inyo
Mono
Orange
Riverside
San Bernardino
San Diego



San Diego and Desert Region – Information at a Glance		
<u>Category</u>	<u>Statistic</u>	<u>Rank among the Regions</u>
Population, 2016	11,231,126	2
Population Growth, 2010-2016	6.6%	2
Land Area	49,667 square miles	1
Population Density	226 persons per square mile	3
Median Household Income	\$63,632	2
Population in Poverty	15.2%	4
65 Years Old and Older	13.2%	3 (tie)
Owner Occupied Household	58.1%	2
Median Value of Owner-Occupied	\$385,439	3
Median Gross Rent	\$1,313 per month	2
Persons per Household	3.09	2

The San Diego and Desert region had a high median household income, \$63,632, second highest among the regions in the state following the San Francisco and Mid-Coast region. The state median was \$61,818. The poverty rate in the San Diego and Desert region was almost exactly that of the state overall, 15.2-percent for the San Diego and Desert region, and 15.3-percent for the state. It was the second-lowest regional rate next to that of the San Francisco and Mid-Coast region. The portion of the region that is elderly is about the same as that of the Los Angeles and Coast region, 13.2-percent, and slightly less than the statewide average, 13.6-percent.

A large percentage of residents of the San Diego and Desert region are home-owners, with 58.1-percent in owner-occupied households, compared to 54.3 percent for the statewide average. Only the North and Mountains region has a higher percentage at 59.3-percent. The value of the median owner-occupied dwelling was in the middle among the five regions, at \$385,439, almost exactly at the state median. The median rental rate was \$1,313 per month, second highest among the regions, but still far behind the number for the San Francisco and Mid-Coast region. It is slightly above the state median of \$1,255. Finally, the average household in the San Diego and Desert region is carrying 3.09 persons, a comparatively high number compared to the state average of 2.96 persons. Only the Central Valley region, at 3.21 persons, is higher.

Utility Services in the San Diego and Desert Region

Electric service consumption in the San Diego and Desert region was right in the middle among the five California regions, both in the summer months and in the winter months. Summer usage averaged 560 kWh per month, just above the state average of 534 kWh, and higher than the consumption levels of the Los Angeles and Coast region (506 kWh) and the San Francisco and Mid-Coast region (415 kWh). In the winter months the San Diego and Desert region, at 449 kWh per month, was in an almost exact tie with two other regions, the San Francisco and Mid-Coast region, at 445 kWh and the Los Angeles and Coast region, at 442 kWh.

San Diego and Desert Region – Residential Electric Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Electric Consumption (kWh)	560 and 449 kWh	3 and 3
Summer and Winter Electric Bills	\$105.21 and \$79.03	3 and 4



Percentage of Residential Customers on CARE Rates	24%	4
Non-CARE and CARE Electric Consumption (kWh)	513 and 478 kWh	3 and 3
Non-CARE and CARE Electric Bills	\$103.60 and \$56.37	3 and 3

The average monthly bills were in the middle during the summer months, and in fourth position among the regions in the winter months. The average summer bill in the San Diego and Desert region was \$105.21, almost exactly equal to the state average of \$102.13. The average San Diego and Desert region winter bill was \$79.03, nearly five dollars below the state average of \$83.74. Participation in CARE rates in the San Diego and Desert region was 24-percent, fourth among the five regions, and slightly lower than the state average of 27-percent. CARE consumers used seven-percent less electric service than the Non-CARE customers, 478 kWh vs 513 kWh, a slightly greater difference than the state average of four-percent less.

San Diego and Desert Region – Residential Gas Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Summer and Winter Gas Consumption (Therms)	14 and 31	5 and 4 (tie)
Summer and Winter Gas Bills	\$18.20 and \$35.64	4 and 4
Percentage of Residential Customers on CARE Rates	23%	4
CARE and Non-CARE Gas Consumption (Therms)	22.0 and 23.0 Therms	4 and 5
CARE and Non-CARE Gas Bills	\$21.57 and \$28.52	5 and 5

Residents of the San Diego and Desert region consumed low quantities of natural gas service both in the summer months and in the winter months. During the summer months, the average gas consumption was 14 therms per month, the lowest among the five regions. During the winter months, it was 31 therms, sharing the rank of lowest with the Los Angeles and Coast region. Gas bills were second-lowest in both summer months and winter months. At \$18.20 per month, the average natural gas service bill in the San Diego and Desert region was more than two dollars less than the statewide average, but still nearly one dollar higher than the average bill in the Central Valley region. In the winter months, the \$35.64 average bill in the San Diego and Desert region was about 12 dollars below the statewide average, but still one dollar above the average in the Los Angeles and Coast region.

CARE customers accounted for 23-percent of the natural gas customers in the San Diego and Desert region, higher than the rate of 20-percent in the San Francisco and Mid-Coast region, but well below the statewide average of 27-percent. The CARE customers used slightly less gas service than the Non-CARE customers, 22 therms vs 23 therms over the one-year term of the analysis. This result was found in only two of the five regions – the San Diego and Desert region and the Los Angeles and Coast region. In the other regions, the CARE customers consumed higher amounts of gas than the Non-CARE customers. For the state as a whole, the average for CARE customers was 31.2 therms per month vs 27.0 therms for the Non-CARE customers. The average bills of the CARE customers were 24-percent lower than those of the Non-CARE customers in the San Diego and Desert region, \$21.57 per month vs \$28.52 for the Non-CARE customers.



San Diego and Desert Region – Residential Water Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Residential Water Consumption (Gallons per Person per Day)	92.2	1
Average Monthly Bill Calculated for a Family of Four at Regional Average Gallons per Person per Day	\$72.34	1
Average Monthly Bill for 12 CCF per Residential Family	\$58.70	2

Domestic water usage was the highest among the five regions in the San Diego and Desert region, 92.2 gallons per person per day. The second-highest average use was in the Central Valley region, 89.9 gallons. The statewide average was 78.1 gallons. Not only did the residents of the San Diego and Desert region consume the most water per capita, it appears that they had the highest monthly bills, based on a calculated bill for a family of four residents. The calculated amount was \$72.34 per month for the San Diego and Desert region, about nine dollars above the calculated statewide average of \$63.22. However, when the average bill is calculated on a standard of 12 CCF, the region moves to the second position, at \$58.70 for the San Diego and Desert region, behind the San Francisco and Mid-Coast region, where 12 CCF per month would on average cost \$78.72.

San Diego and Desert Region – Residential Broadband Service Indicators		
<u>Category</u>	<u>Statistic</u>	<u>Rank Among the Regions</u>
Percentage of Households with Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	98% and 97%	2 and 2
Percentage of Households with Multiple Providers of Fixed Broadband Available (Basic and at least 25-Down, 3-Up)	93% and 93%	3 and 3
Percentage of Households Subscribing to Fixed Broadband Service (Basic and at least 25-Down, 3-Up)	89% (Tie) and 48%	1 and 3

Broadband service is available in the neighborhoods of almost all residents of the San Diego and Desert region, with 98-percent of households located in census blocks where fixed broadband service is available. The number for high-quality broadband service, 25-down and 3-up, is 97-percent, above the statewide average of 94-percent. Multiple service providers exist in the census blocks where 93-percent of the households of the San Diego and Desert region live. That number, also, is above the state average of 91-percent. Most residents are taking advantage of that availability, for 89-percent of households in the San Diego and Desert region were subscribed to broadband service, and 48-percent were subscribed to high-quality broadband service.



Part 3: Data Sources Relied Upon for this Report

US Census Bureau Demographic Information

The US Census Bureau is the leading source of objective information and quality data about the nation's people and economy. In addition to the decennial census (every 10 years), the Bureau continues to collect information and provide ongoing information through the American Community Survey. The information in this CPUC White Paper is from the Bureau's "Quick Facts," an ongoing and frequently updated statistics for counties, cities and towns as well as the states. For this CPUC White Paper, analysts collected Quick Facts for each of the counties included in each region and aggregated the information to region-wide statistics. Most of the statistics presented in this report are for the year 2016, and some are for the years 2010 through 2016.

Electric and Gas

The three large investor-owned electric utilities, Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company, provided the CPUC with large sample of bills for each month of 2016 from every zip code in their service territories. The CPUC staff analyzed and re-assembled the information to calculated statistics on 10-percent or more of the customer bills from each zip code in the three utilities' service areas. For PG&E, for example, there are over 1,000 zip codes, and we have more than 10-percent of the bills from each of those zip codes. So for PG&E alone, that totals up to over 6 million bills for the 12 months of 2016. This same process was used for the gas bills of the three large retail gas utilities in California, Pacific Gas & Electric Company, Southern California Gas Company and San Diego Gas & Electric Company. We do not have information for bills of the remaining CPUC-jurisdictional electric utilities. And we do not have bills for the government owned agencies, such as the Los Angeles Department of Water and Power, or for any municipal electric utilities such as the Sacramento Municipal Utility District, or for any other agencies such as irrigation districts. Note that no information was collected from PacifiCorp or any of the other smaller CPUC-jurisdictional utility companies.

Water

The Division of Drinking Water (DDW) of the California State Water Resources Control Board (SWRCB) regulates public water systems, oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and performs a number of other functions. Each water system must submit an annual report to the DDW each year. The reports are coded and annual databases of large water systems and small water systems are maintained. About 700 water systems are defined as "large" (getting definition), and the remainder (several thousand) are defined as "small." Because the CPUC analysis found that not all of the small utility data were reliable, we relied on the large utility database, and we were able to use the information provided by about 500 service providers.

Broadband

All Facilities-based broadband providers are required to file information with the Federal Communications Commission (FCC) on where they offer internet access and additional information.



These reports are known as “477 data reports.” Fixed providers file a list of the census blocks⁹ in which they can or do offer service to at least one location, and they also file additional information. Mobile providers also file certain information. The reports are public, and the CPUC reviews them and downloads all of the reports and the information they contain. This white paper relies on the 477 data reports for the year 2016.

⁹ The US Bureau of the Census defines areas known as census blocks as “a statistical area bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school districts, and county limits.” A census block is the smallest geographic unit for which the Census Bureau tabulates 100-percent data. Many blocks in urban areas correspond to individual city blocks bounded by streets, but blocks -- especially in rural areas -- may include many square miles and may have some boundaries that are not streets. https://factfinder.census.gov/help/en/census_block.htm.